

Adopt w/ recommendations

**METHODOLOGIES FOR THE
CALCULATION OF IMPACT FEES
NEWMARKET, NH**

October 23, 2000

Prepared For:

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SUMMARY OF IMPACT FEE PRINCIPLES AND IMPACT FEE SCHEDULES

Purpose of Report

This report was prepared under contract to the Town of Newmarket. The Town's objective was to prepare methodologies, where feasible, determine proportionate impact fee assessments for selected public capital facilities.

Each of the methodologies in this report explores and establishes a rational basis for determining proportionate dollar amounts for impact fees that may be assessed under the provisions of a local ordinance. Impact fee assessments are implemented primarily to ensure that adequate public facilities remain available to accommodate new growth and to obtain more of the revenues needed for such facilities at the time new development takes place.

Newmarket's property tax base is highly dependent on a residential tax base, and the Town has a comparatively small overall tax base per resident. Eighty-five percent (85%) of the Town's property tax base is residential land and buildings, and fifteen percent (15%) is classified as commercial, industrial, or public utility property. According to studies prepared by the New Hampshire Office of State Planning, Newmarket had the lowest equalized property valuation per capita of all the cities and towns in Rockingham County. In comparison years 1980, 1990 and 1998, Newmarket's equalized valuation per capita was 30-40% lower than the New Hampshire state average. While impact fees cannot rectify tax base imbalances, they may be useful in Newmarket to offset a portion of the capital cost of growth that would otherwise be absorbed principally by current residential properties.

Authorization, Purpose and Use of Fees

New Hampshire RSA 674:21, I (m) lists impact fees as one of the innovative land use controls available to New Hampshire municipalities. Under this statute, impact fees may be based on the recoupment of the costs of capital improvements made in anticipation of the needs created by new development. Impact fee assessments may also be based on the cost of capital facilities to be constructed in the future.

Impact fees may be expended only for the purposes for which they are collected. This means that impact fee accounts cannot be co-mingled. For example, impact fees collected for wastewater treatment capacity must be expended for that purpose, and cannot be spent for another facility category such as public schools. Impact fees revenues should not be allocated toward maintenance and improvement projects that do not contribute to facility capacity. Impact fees may be used to offset renovation costs, but only where these renovations contributed to an increase in facility capacity.

Proportionality

RSA 674:21,V (a) requires that impact fees represent a proportionate share of the capital improvement costs that are reasonably attributable to the demands of new development. The "upgrading" of existing facilities (for example, the cost of improving the quality or level of

service) should not be reimbursed from impact fee assessments. The municipality may only charge impact fees for the *growth related portion* of capital facility costs.

Impact fees represent a *one-time charge* assessed at the time where new development takes place and creates a demand on the capacity of a capital facility. As such, these methodologies recognize each new dwelling unit, utility connection, or new or increased commercial or industrial floor area to represent a permanent addition to the base of demand on the capacity of Newmarket's capital facilities.

Present Value of Improvements and Credits

The methodologies used in this report are based on the computation of capital facility costs and credits at present values. In this manner, all new development is assessed at fees that represent current capital development costs, so that the past investments incurred by existing development do not effectively subsidize new development. The calculations should be updated periodically to maintain this relationship.

At the same time, certain credits are calculated to assure that new development is not assessed more than its proportionate share of capital improvement costs. One of the generally accepted principles of impact fee assessment is the calculation of appropriate "credits" to the feepayer that recognize the contribution of property tax revenues or user fees (past or future) paid by a given site or development to provide existing facility capacity.

The need for both past and future credits toward payments for facility capacity costs were considered in each methodology, and where needed, credits have been applied in the impact fee formulas to assure that the fee payer is not charged twice for the same capacity costs. Where applied, present value credits for past and future payments in the form of user fees or property taxes have been calculated using a discount or interest rate of 6%.

Summary of Impact Fees for Newmarket

Each of the above principles can be reflected in an impact fee assessment system by making reasonable assumptions that translate the expected demand on capital facility capacity into a proportionate charge for the value of the capacity to be consumed. While no method will perfectly anticipate the exact demands of every future development, proportionate and reasonable charges have been developed based on the average impacts measured by average per unit demands on capita systems measured from existing users and developments.

The methodologies developed for the Town of Newmarket in this report support impact fee assessments for four capital facility categories:

- Public Schools
- Public Recreation Facilities
- Wastewater Treatment Facilities
- Water Supply and Treatment Facilities

Each of these facilities is the subject of a separate chapter in this report. Each chapter sets for the rationale, assumptions and calculation of proportionate impact fees and credits where appropriate.

It is recognized that additional capital facilities, or amendments and updates to the methodologies detailed herein, may later be incorporated into the Town's impact fee assessment system. Any change in the dollar amount of impact fee assessment, or the addition of new impact fee charges, should be preceded by the preparation and adoption of updated or additional impact fee methodologies or reports that support the basis for such assessments.

The amounts and basis for impact fee assessments supported by this methodology report are set forth below for four capital facility categories. Impact fees for public schools and recreation would be assessed only to new residential development. Impact fees for wastewater treatment and water supply and treatment would be assessed to all new development connecting to the respective utility systems. The scope of "new development" for impact fee assessment purposes will be defined in the Town's Impact Fee Ordinance.

NEWMARKET IMPACT FEE ASSESSMENT SCHEDULE					
RESIDENTIAL IMPACT FEES PER DWELLING UNIT					
Units in Structure	Public Schools	Recreation Facilities	Wastewater Treatment*	Water Supply & Treatment*	Maximum Residential Impact Fees
Single Family Detached	\$3,418	\$276	\$1,226	\$737	\$5,657
Single Family Att. or Townhouse	\$2,197	\$325	\$1,019	\$612	\$4,153
2 - Unit Structures	\$2,963	\$353	\$905	\$544	\$4,765
Multifamily 3-4 Units	\$1,489	\$323	\$791	\$475	\$3,077
Multifamily 5+ Units	\$743	\$279	\$791	\$475	\$2,287
Manufactured Housing	\$1,770	\$280	\$724	\$435	\$3,208
Notes on fee derivation and application to new development	Enrollment per unit x capital cost per pupil, less state building aid and property tax credits. Fee not applicable to housing for elderly.	Implementation will require significant investment of Town funds to rectify existing deficiencies. Fee schedule reflects credit for existing deficiencies.	(\$ 6.70 per gpd expected water usage - cost of central treatment facilities only). Assessed only on new or upgraded connections to public wastewater disposal system.	(\$ 4.03 per gpd expected water usage - cost of water treatment facilities only). Assessed only on new or upgraded connections to public water system.	Fees for each facility type must be segregated in separate accounts. Fees cannot be pooled.
NON -RESIDENTIAL IMPACT FEES	Public Schools	Recreation Facilities	Wastewater Treatment	Water Supply & Treatment	
Basis for Assessment	Not Applicable	Not Applicable	\$ 6.70 per gpd expected water usage. Factors provided in methodology to allow estimates of fee per sq. foot or by other measures, by type of use.	\$ 4.03 per gpd expected water usage. Factors provided in methodology to allow estimates of fee per sq. foot or by other measures, by type of use.	Fees for business and industry will vary by type of business and/or size of structure and estimated demand on utility systems.
<i>*Assessed only to developments connecting to the utility system(s)</i>					

Changes to the impact fee assessment schedule should be made only in accordance with new or updated methodologies adopted by the Planning Board in accordance with the provisions of the impact fee ordinance adopted by the Town of Newmarket.

Individual Methodologies in this Report

The basis for the impact fee assessment schedule on the prior page is detailed in a series of four separate methodologies that follow in this report:

- Part I: Impact Fees for Public Schools
- Part II: Impact Fees for Public Recreation Facilities
- Part III: Impact Fees for Wastewater Treatment Capacity
- Part IV: Impact Fees for Water Supply and Treatment

Updating the Impact Fee Schedules

The impact fee methodologies in this report rely on numerous variables which may change over time and which may be adjusted to reflect estimated construction or replacement costs, school enrollment multipliers, local assessed property value and other factors. In this manner, future updates to the model, when necessary, can be made to reflect changing demographics and enrollment characteristics, as well as changes in local government fiscal structure and capital facility plans.

These variables may include, but are not limited to, changes in:

- Facility standards (average capacity used per unit of development);
- Revisions to the Newmarket Capital Improvement Plan;
- Replacement cost of capital facilities;
- Federal/state grants or reimbursements applied to capital facility costs;
- Donations and/or user fees applied to capital cost;
- For schools, public enrollment ratios per dwelling unit;
- Number of occupied dwelling units by type;
- Net local assessed value of property for local taxes;
- Estimated assessed value per new housing unit by type of construction;
- Remaining debt service payments for existing capital facilities;
- Discount/interest rates for computing present value of past and future payments;
- Impact fee income received.

PART I

**IMPACT FEES FOR
PUBLIC SCHOOLS**

Town of Newmarket

**PUBLIC SCHOOL IMPACT FEES
Town of Newmarket**

Authority

New Hampshire RSA 674:21,V authorizes municipalities to assess impact fees to new development for the construction or improvement of capital facilities owned by the municipality, including public school facilities, or the municipality's proportional share of capital facilities of a cooperative or regional school district of which the municipality is a member.

Impact fees may be used to recoup the cost of school facilities developed in anticipation of enrollment growth, or can be used to fund future school facility expansion to accommodate enrollment that is generated by new development. The costs of simply upgrading school facilities, where such improvements do not contribute to capacity, are not chargeable as impact fee assessments. This means that capital projects such as re-roofing, general renovations and repairs cannot be paid for with impact fee assessments.

As of October 2000, the potential for new facilities or school expansion is under consideration by the Town of Newmarket and the Newmarket School District, but no specific plan yet exists for capacity expansion except for a designed addition to the high school that will add additional classrooms. According to a draft of the Newmarket Master Plan (2000), the Town may consider creating a new school or schools to replace existing facilities and expand school capacity. The District expects that a building committee will be formed to study specific alternatives.

Inventory of Facilities

At the present time, grades K-5 are accommodated at the elementary school, while a combined junior high/high school in Newmarket serves grades 6 – 12. The elementary school houses a preschool program, kindergarten and grades 1-5. The capacity of the school for grades 1-5 is estimated at 540, excluding the modular, or "portable" buildings on the site. The original section of the elementary school was constructed in 1987 and a three-room addition was constructed in 1998 to establish a Kindergarten. The Kindergarten wing can accommodate a maximum of 120 pupils if ½-day sessions are used. Two large modular (portable) classroom buildings are located at the rear of the permanent structure housing an equivalency of four classrooms. These classrooms are not included in the capacity estimates above. At the present time there is no immediate plan to replace these modular classrooms.

According to the draft Master Plan, the junior/senior high school, which serves grades 6 – 12, was built in several phases over the course of forty years. Approximately one third of the structure was remodeled and expanded in 1998. Following the renovations, the facility had an estimated classroom capacity of 642 students. Additional phases would allow for more classrooms to be added at the existing site raising the potential core and classroom capacity to 770 students.

Part I. Public School Impact Fees

Table I-1 (on the next page) is a facility inventory for the grade K to 12 facilities of the Newmarket School District. The table illustrates the overall building area of the school facilities, their capacity and the gross floor area per pupil capacity. The gross floor area and total capacity resulting from the planned addition to the junior high/high school has been included in average floor area per pupil at capacity for grades 6-12. Based on this analysis, the following are the average floor area requirements per pupil assumed for the District with respect to impact fee assessment:

Grade Level	Gross Square Feet Per Pupil Capacity
Elementary Grades K - 5	91 Sq. Ft.
High School Grades 6 - 12	124 Sq. Ft.
Total Grades K-12	105 Sq. Ft.

The average gross floor area per pupil as shown above may differ from the floor area per pupil that is applicable to the construction of future schools in Newmarket. However these floor area averages per pupil are the best available measure for impact fee derivation because they are computed based on the actual quantity of facilities supported locally by the District. It is reasonable to expect that the impact of new development can be measured using similar spatial requirements per pupil. When additional school floor area is approved or added to the system, or when capacity estimates are modified by changes or the reallocation of grades within buildings, the impact fee calculation can be updated based on the revised floor area standards and estimated capacity. In this way the "standard" for school space per pupil is always equal to what is actually provided by the facilities supported or approved for future construction by the District. This approach provides an equitable means of assigning school facility space impacts on a proportional basis to new development.

Future Plans

A 1995 report by the Center for Educational Field Services (CEFS) evaluated a Kindergarten program, and estimated costs of moving the 6th grade from the junior/senior high school to the elementary school. In January 1997, a report was submitted to the District by educational consultants Joyce and Masse that analyzed the local educational programs, and provided educational specifications for a grade 6-8 middle/junior high school, and a grade 9-12 high school. Architectural plans for classroom additions to the junior high/high school complex were developed by the H.L. Turner Group in March 1997. Major improvements to the junior/senior high school were constructed in 1998; future plans have been designed to allow the existing facility to increase in size to an estimated 95,330 square feet with the completion of all phases of the improvement program.

The Newmarket Master Plan (draft, 2000) describes options for school development for future consideration. One would add a permanent addition to the elementary school. The present high school would be renovated to house the Town Hall, Public Works and Fire Department and a new high school would be built on the site of the Public Works Facility on Route 152. Another option would be to convert the high school to an elementary school and convert the existing elementary school to a multi-purpose Town Complex.

TABLE I-1

NEWMARKET PUBLIC SCHOOLS: FACILITY INVENTORY AND FACILITY STANDARD FOR GROSS FLOOR AREA PER PUPIL BASED ON CAPACITY OF EXISTING AND PLANNED FACILITIES										
School Facilities	Original Yr. Built/Last Expansion Dates	Location (Street)	Site Area (Acres)	Grades Served	Building Area Gross Sq. Ft. (1)	Number of Stories	Net Capacity (2)	Gross Sq Ft/Pupil Capacity	Fall 2000 Enrollment (3)	Enroll as % Of Capacity
ELEMENTARY										
Newmarket Elementary School - Main Bldg	1987-88	243 So. Main Street	11.5	Pre-School through 5th	55,380	1 Story	540	103	508	94%
Kindergarten Wing	1998 Addition - 75% paid by State of NH	same	p/o total	Kindergarten	4,876	1 Story	120	41	97	81%
Total Area					60,256	1 Story	660	91	605	92%
JUNIOR - SR. HIGH SCHOOL										
Newmarket Junior - Senior High School	1997 upgraded, including capacity improvement	213 So. Main Street	15.0	6th-12th	85,530	2 story	642	133	565	88%
With Proposed Addition	Gross area with proposed classrooms				95,330		770	124	565	73%
TOTAL WITH PROPOSED H.S. ADDITION			26.5	K-12	150,710		1,430	105	1,170	82%

Source of capacity and building area estimates:

- (1) Does not include space in 2 modular buildings ("portables") housing 4 classrooms.
- (2) Net capacity estimate based on main buildings only; does not include portables in figure. Maximum Kindergarten capacity is 120 using 1/2 day sessions.
- (3) Enrollment is total in main buildings and portables combined. Kindergarten total is enrollment is 97, attending 1/2 day sessions.

Public School Pupils Per Dwelling Unit

Change in School-Age Population and Housing Tenure

Rough estimates of expected public school enrollment per housing unit can be derived by comparing the total school aged population (using the age 5-17 year old age group as an estimate) to the number of occupied housing units or households. Data for Newmarket is derived from the US Census as illustrated in Table I-2 below:

**TABLE I-2
CHANGE IN HOUSING UNITS AND POPULATION
NEWMARKET 1970-1990**

	1970	1980	1990	Change	Change
				1970-80	1980-90
Total Population	3,361	4,290	7,157	929	2,867
Population Age 5-17	816	667	1,037	-149	370
Total Housing Units	1,171	1,859	3,285	688	1,426
Occupied Units					
Owner	655	862	1,493	207	631
Renter	442	881	1,405	439	524
Total	1,097	1,743	2,898	646	1,155
Persons Per Occupied Unit	3.06	2.46	2.47		
% of Units Occupied	93.7%	93.8%	88.2%		
% Rental Tenure	40.3%	50.5%	48.5%		
Age 5-17 Per Occupied Unit	0.744	0.383	0.358		

Declining household size, an increase in multifamily housing, and a corresponding decline in owner-occupancy rates have combined to lower the school age population per household from an estimated 0.744 per occupied unit in 1970 to 0.358 in 1990. In addition, the local rental housing stock serves students attending the nearby University of NH, which could result in lower ratios per rental or multifamily unit than are experienced elsewhere.

In 1990, the age 5-17 year old group represented 1,037 persons in Newmarket, while total public school enrollment in that year was 898 (13% lower). There is a gap between expected and actual enrollment based on these measures. Other sample data from the Census suggest that over 10% of total school enrollment from pre-primary to high school age may be in private schools.

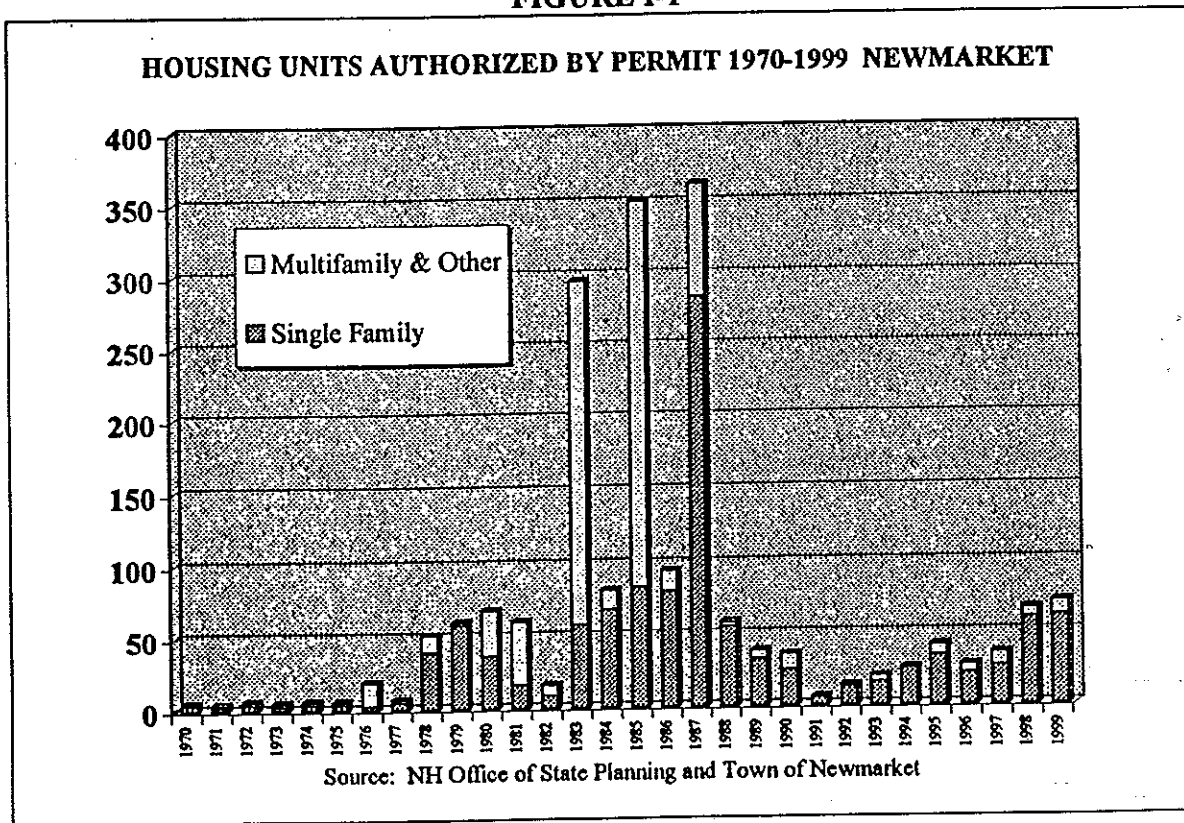
Housing Growth 1970-1999

Table I-3 and Figure I-1 below illustrate residential building permit activity in terms of the number of units authorized in Newmarket during the last three decades. The proportion of units in single-family construction increased during the 1990s. The period 1983-1988 was one of extraordinary housing activity in Newmarket as measured by permit activity.

TABLE I-3
Housing Units Authorized by Building Permit in Newmarket

Period	Total Units Authorized	Single Family Units Authorized	Percent Single Family
1970-79	171	129	75%
1980-89	1,431	730	51%
1990-99	347	293	84%

FIGURE I-1



Public Enrollment Per Dwelling Unit

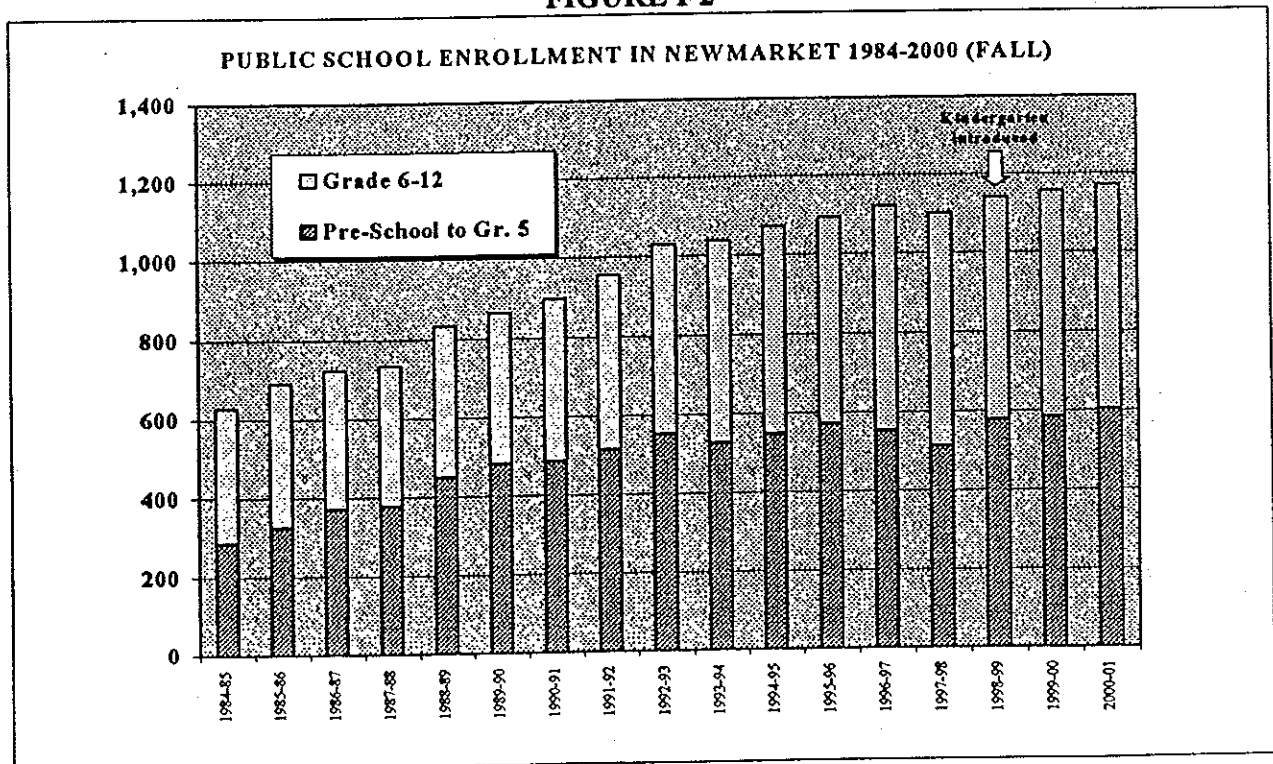
Model-Based Estimates. Impact fees are derived based on the projected number of public school pupils per occupied dwelling unit for various types of construction. Two methods are utilized to approximate a reasonable enrollment multiplier by type of construction. The first was to review

Part I. Public School Impact Fees

the 1990 Census Public Use Micro-data Sample (PUMS) for New Hampshire. This approach relied on tabulations developed in 1994 by Bruce C. Mayberry, Planning Consultant using data extracts commissioned from the University of New Hampshire. Using this database, proportional baseline multipliers were applied to the occupied housing stock of Newmarket for 1990 and the resulting enrollment projections compared to the actual enrollment in that year. Proportional adjustments were then made to the enrollment multipliers to fit them to Newmarket's housing occupancy and enrollment data. Enrollment per unit was reconfigured to recognize the K-5 vs. 6-12 split in local school facilities in Newmarket.

Estimated 1990 enrollment per housing unit in Newmarket was updated by estimating the number of occupied housing units by type, and the number of resident school children enrolled in the public schools, as of October 2000. The proportional relationship that existed in 1990 between different types of housing units was assumed to be constant through 2000. In 1990, overall occupancy rates were low in rental housing throughout the State. Since the market is considerably improved since 1990, and given that Newmarket has a very high proportion of rental units, occupancy rates were also adjusted. Some growth in households since 1990 has been realized simply because of the reduction in the vacancy rate. The occupancy rate assumed for 2000 is 98% for single-family detached units and 95% for all other units. The process of estimating enrollment ratios for Newmarket using a model is illustrated in Table I-4 on the following page. Enrollment changes in Newmarket are summarized in Figure I-2 below.

FIGURE I-2



Part I. Public School Impact Fees

The long-term history over the past fifteen years of enrollment growth in Newmarket has shown an increase of 540 students from 1984 to 2000. If the increased number of pupils resulting from the institution of Kindergarten is excluded, there was a net growth of 443 pupils in the period in grades pre-school through grade 12 during that period. Since 1990, 306 pupils were added (about 209 pupils if the introduction of Kindergarten is excluded). It appears that a higher rate of enrollment growth occurred during the 1980's than in the 1990's, probably in part a response to the higher rate of housing construction activity that occurred during the period.

TABLE I-4

ESTIMATE OF AVERAGE ENROLLMENT PER HOUSING UNIT BY GRADE AND BY TYPE OF UNIT IN NEWMARKET, 2000 Estimate of Total Occupied Units by Type and Test of Multipliers						
Units In Structure	Estimated Public Enrollment Per Unit By Units in Structure: Newmarket, N.H.			Test of Multipliers— Estimate Resulting From Application of Multipliers To Occupied Units		
	Grade K-5	Grade 6-12	Total K-12	Grade K-5	Grade 6-12	Total K-12
Single Family Detached	0.274	0.250	0.524	384	351	736
Single Family Att. (Townhouse)	0.109	0.096	0.205	27	23	50
2 - Unit Structures	0.180	0.211	0.391	43	50	92
Multifamily Structures 3-4 Units	0.126	0.115	0.241	39	36	74
Multifamily Structures 5+ Units	0.066	0.076	0.142	65	75	140
Manufactured Housing	0.185	0.116	0.301	47	30	77
Total Occupied Units	0.176	0.164	0.340	605	565	1,170
(Predicted equals actual enrollment using these enrollment multipliers)						

HOUSING UNIT COUNT (1990) AND ESTIMATES FOR 2000 - EXCLUDES AGE-RESTRICTED DEVELOPMENTS LIMITED TO SENIORS								
Units In Structure	Newmarket Housing Units in 1990 Excluding Age-Restricted Units				Estimate of Occupied Units, 2000(1)			
	1990 Housing Units				Units Authorized By Permits Issued 1990-1999	Total Housing 2000	Est. Occup. Rate	Occupied 2000
	Occupied	Vacant	Total	Occ. Rate				
Single Family Detached	1,152	47	1,199	96.1%	296	1,495	98.0%	1,465
Single Family Att. (Townhouse)	210	33	243	86.4%	5	248	95.0%	236
2 - Unit Structures	229	19	248	92.3%	1	249	95.0%	237
Multifamily Structures 3-4 Units	291	34	325	89.5%	0	325	95.0%	309
Multifamily Structures 5+ Units	795	241	1,036	76.7%	11	1,047	95.0%	995
Manufactured Housing	221	13	234	94.4%	41	275	95.0%	261
Total Occupied Units	2,898	387	3,285	88.2%	354	3,639	96.2%	3,502

(1) Total stock estimated to include 1990 total plus net unit additions authorized 1990-1999, assumed as completed and occupied by October 2000. Occupancy assumptions assume that rental market-oriented units have increased occupancy since 1990 under improved market conditions.

Part I. Public School Impact Fees

The estimated ratios of enrollment per occupied unit in Newmarket, derived from an estimate of occupied units and total enrollment as of October 2000 are shown in Table I-5.

TABLE I-5
Model-Based Estimate of Pupils Per Occupied Unit – Newmarket 2000

Type of Unit	Grades K-5	Grades 6-12	Total Grades K-12
Single Family Detached	.274	.250	.524
Single Family Attached (Townhouse)	.109	.096	.205
Two-Unit Structures	.180	.211	.391
Multi-family 3-4 Units	.126	.115	.241
Multi-family 5+ Units	.066	.076	.142
Manufactured Housing	.185	.116	.301
Total Occupied Units	.176	.164	.340

The above enrollment ratios represent proportional estimates derived from a model based on Newmarket's enrollment growth and its distribution of occupied housing units.

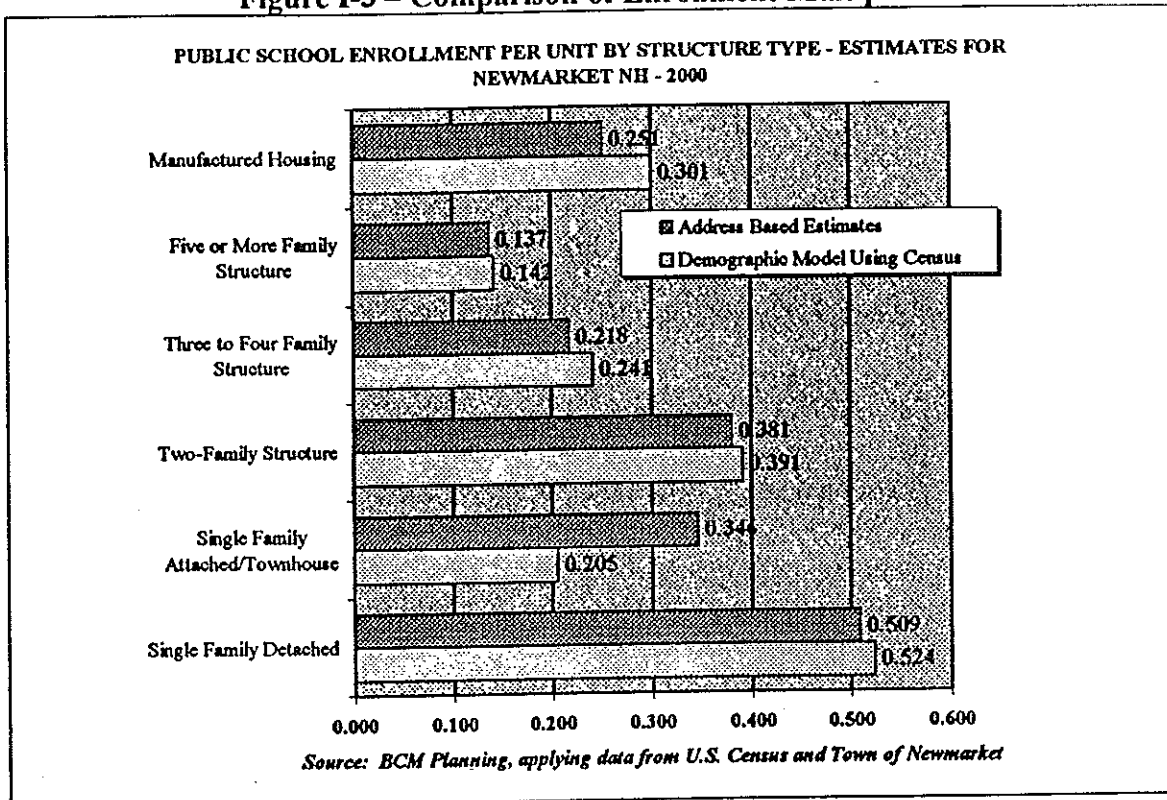
Enrollment-by-Address Estimates. The second method of estimating enrollment per unit relies on a comparison of enrolled pupils by address and grade level, and relating the pupil address to the type of housing unit based on the Town's tax assessment information. Based on the total units derived from the assessment information, it was clear that in some cases the Census uses different definitions of structural types than were used in the assessment information system. Where possible, units were reclassified for the tabulations to reflect Census categories where possible. This method allowed for the derivation of enrollment multipliers from actual enrollment counts and address information for 1999-2000. Table I-6 was derived from a cross-tabulation of the School District's pupil address data with the Newmarket tax assessment files. The ratios have been adjusted for estimated vacancies and the presence of housing for the elderly. The adjusted enrollment ratios shown in Table I-6 reflect an assumption of a 2% vacancy rate in the single-family housing stock and attached condominiums and a 5% vacancy rate in all other units.

TABLE I-6
Enrollment Per Unit by Type Using Student Address and Town Assessment Information

Type of Unit	Grades K-5	Grades 6-12	Total Grades K-12
Single Family Detached	.247	.262	.509
Single Family Attached (Townhouse)	.209	.137	.346
Two-Unit Structures	.169	.212	.381
Multi-family 3-4 Units	.114	.104	.218
Multi-family 5+ Units	.078	.059	.137
Manufactured Housing	.102	.149	.251
Total Occupied Units	.173	.174	.347

Figure I-3 illustrates the different enrollment multipliers produced by the two methods. The only major difference between the two methods above is that the address-based data indicate that townhouse development (single family attached) in Newmarket may have a somewhat higher impact per unit (0.346 pupils per dwelling) than is anticipated by the model-based method (0.205). The results in Table I-6 are considered more accurate, as they were calculated using local data only; this series of multipliers has been used as the basis for projecting the enrollment impacts of new housing development for the purpose of impact fee assessment.

Figure I-3 – Comparison of Enrollment Multipliers



Future Enrollment

New construction can be expected to contribute enrollment per unit similar to the average for existing occupied housing in the Town. The above data confirm the linkage between housing units by type and their relative proportional impact on school enrollment and ultimately their demand on school capacity.

At present, the District is experiencing demands from enrollment that is approaching 100 pupils per grade. The ability to make accurate projections using typical cohort methods is hampered in Newmarket by the high mobility of its population. About 50% of the Newmarket's housing units were renter-occupied in 1990. The renter population is far more mobile than the owner population. According to national data from the American Housing Survey for 1997, 36% of renters moved during that year, compared to 8% among homeowners. With a high proportion of renter households in Newmarket, the local school enrollment profile is sensitive not only to

growth, but also to shifts in the economy, employment and unemployment, and related migration in and out of Newmarket.

Based on a facility needs analysis prepared for the District in December 1995, the Center for Educational Field Services recommended planning for year 2005 enrollments of between 1,300 and 1,325 pupils in Newmarket (with Kindergarten added). A "cohort survival ratio" model of future enrollment prepared for that report in 1995 predicted that enrollment could decline from about 1,100 (actual 1,093 without Kindergarten) in 1995 to between 833 and 1,073 by the year 2004. Actual enrollment excluding Kindergarten was 1,073 in October 2000, indicating that a small decline has occurred since 1995 (20 pupils). According to the 1995 report, CEFS advised that it believed the cohort survival model to be invalid for use in Newmarket because of in-migration to the town.

A more recent projection prepared by the New England School Development Council in 1998 predicted (using the cohort survival method) that 2000-01 enrollment (with Kindergarten) would decline from 1,129 to 1,068. Including Kindergarten, actual enrollment as of October 2000 was 1,170, which is over 100 pupils higher than the enrollment forecast for this academic year.

Capital Cost of School Facilities

In the prior steps of this analysis, we have estimated the gross floor area of school facilities required per pupil, and the number pupils per housing unit. The next step is to estimate the cost of constructing school capital facilities on a per square foot basis to derive a total school capital cost impact per housing unit. It is assumed that future pupils will be accommodated by facilities offering building quality and spatial characteristics that are comparable in the existing permanent school structures of Newmarket.

The impact fee should represent the capital cost of school facility capacity and related development including core and classroom facilities, necessary capital equipment within the schools, and land acquisition where future capacity will require a larger or new site. Land costs have not been included in the impact fee assessment, as the need for new school sites has yet to be determined. Typically, elementary schools require a smaller gross floor area per pupil capacity than do high schools. However, junior high and high schools often cost more per square foot of space due to the need for more core facilities including gyms for competitive athletics, auditoriums, labs, technical equipment, and other specialized features.

Average construction costs per square foot for schools in the U.S. and in New Hampshire are shown in Table I-7. These average construction costs per square foot are as reported by F.W. Dodge reports and compiled by the National Clearinghouse for Educational Facility Development.

**TABLE I-7
SCHOOL CONSTRUCTION/ALTERATIONS - AVERAGE COSTS**

FW DODGE CONTRACT AWARDS FOR SCHOOL CONSTRUCTION- NATIONAL 1999				
	Dollar Value in Thousands	Sq. Footage in Thousands	Number of Projects	Cost/S.F.
Primary Schools	\$8,806,932	70,808.8	4,084	\$124.38
Mid/Junior HS	\$3,517,571	29,232.3	671	\$120.33
Primary and JHS subtotal	\$12,324,503	100,041.1	4,755	\$123.19
Senior HS	\$11,101,146	80,595.9	3,740	\$137.74
Vocational Schools	\$364,567	2,786.9	324	\$130.81
Total US	\$23,790,216	183,423.9	8,819	\$129.70

FW DODGE CONTRACT AWARDS - NEW HAMPSHIRE 1999				
ALL REPORTED PROJECTS IN NH				
	Dollar Value in Thousands	Sq. Footage in Thousands	Number of Projects	Cost/S.F.
Primary Schools	\$26,759	220.0	20	\$121.63
Mid/Junior HS	\$6,606	53.5	3	\$123.48
Primary and JHS subtotal	\$33,365	273.5	23	\$121.99
Senior HS	\$59,234	418.4	19	\$141.57
TOTAL NH	\$92,599	691.9	42	\$133.83
ADDITIONS/NEW SCHOOLS ONLY - NEW HAMPSHIRE 1999				
Primary Schools	\$24,350	220.0	16	\$110.68
Mid/Junior HS	\$5,093	53.5	2	\$95.20
Primary and JHS subtotal	\$29,443	273.5	18	\$107.65
Senior HS	\$52,579	418.4	10	\$125.67
TOTAL NH	\$82,022	691.9	28	\$118.55

These reported costs include building construction as well as the cost of any fixed installations of equipment within the structure, but do not include site work or moveable furnishings. Note that the cost averages which include alterations and renovation projects are higher than those for additions and new construction only. The cost of additions often includes only classroom space, which is not as expensive as the core facility space that may be included within alterations and new school construction. In 1999, the cost of additions and new school construction in NH averaged about \$119 per square foot. The average cost was about \$108 per square foot for elementary and middle/junior high schools and about \$125 per square foot for high schools. Adding 10% for site work and 15% for capital equipment indicates potential overall development costs of \$135 per square foot for elementary and middle/junior high schools, and \$156 per square foot for high schools.

Part I. Public School Impact Fees

Another source of cost estimates consulted for this analysis was R.S. Means Square Foot Costs (2000). Using generic prototypes most representative of the existing Newmarket schools, the R.S. Means data indicates building construction costs of:

- \$ 85 per square foot for an elementary school of about 60,000 square feet;
- \$ 88 per square foot for a junior high school of 95,000 square feet;
- \$108 per square foot for a high school of 95,000 square feet.

These figures do not include site work or furnishings and equipment. After adding 10% for site work, and 15% for capital equipment in the schools, total estimated costs using the above baseline construction cost estimates indicate comprehensive development costs of:

- \$108 per square foot - elementary school
- \$111 per square foot - junior high school
- \$137 per square foot - high school

The range in comprehensive costs for an elementary school based on FW Dodge construction reports and RS Means cost data (adjusted upward by 25% to include site development costs and capital equipment) is between \$108-\$135 per square foot. Considering the range of costs at the junior high and high school level, using the same methods, average expected costs for these grade levels would range from \$111-\$156 per square foot.

For the purpose of impact fee assessment, estimates of the gross capital cost for construction, site work, and furnishings for school development were assigned in the impact fee model at the following comprehensive costs:

Elementary Schools	\$ 110 per square foot
Middle/High School	\$ 130 per square foot

These dollar amounts are used in the impact fee formula to as the present value of school facility construction.

Capital Facility Cost Impact Per Housing Unit

The capital cost of school facilities is then calculated for each type of unit as:

- Enrollment per housing unit (by grade level)
- x Square feet of school facility space required per pupil (by grade level)
- x Gross capital cost per square foot of facility space by grade level
- Less State building aid
- = Local school capital cost per dwelling unit

In the Newmarket school district, it is a single town school district eligible for 30% State aid for building construction paid out as 30% of the principal due on bonds. An exception is the development of Kindergarten space, which is more heavily subsidized by the State. For the

purposes of modeling for impact fee purposes, it was assumed that 75% of the cost of Kindergarten space has been funded by the State of N. H. The proportional amount of state building aid for combined K-5 facilities has been adjusted to 34% for total K-5 facilities to reflect that additional allocation of State funds. The standard ratio of 30% has been used for grades 6-12.

Based on expected enrollment per unit, spatial requirements and costs factors in this methodology, the gross capital cost and net local capital cost (after State building aid) attributable to various types of housing in Newmarket are illustrated in Table I-8 below:

**TABLE I-8
School Capital Costs Per Dwelling Unit**

Structure Type	Gross Capital Cost per Dwelling Unit	Net Local Cost after State Building Aid
Single Family Detached	\$ 6,695	\$ 4,596
Single Family Attached (Townhouse)	\$ 4,300	\$ 2,934
Two-Unit Structures	\$ 5,109	\$ 3,515
Multi-family 3-4 Units	\$ 2,817	\$ 1,930
Multi-family 5+ Units	\$ 1,732	\$ 1,184
Manufactured Housing	\$3,423	\$ 2,359

The final step in computing an impact fee assessment for new development is to calculate credit allowances for property taxes paid toward debt service to create existing school capacity.

Impact Fee Credits for Property Tax Payments

The payer of an impact fee is assessed an amount equal to the proportionate capital impact of the residential development on new school construction at the time the building permit is issued. One of the general principles of impact fee assessment is to allow for reasonable credits to a fee payer that recognize the contribution of other revenues (in the past or the future) generated by a given site or development to pay for existing school capacity. In the past vacant land contributed property taxes toward the funding of school bonds. In the future, new housing developments on that land will begin paying property taxes toward remaining debt service. Since the impact fee payer will have been assessed for the full local capital cost impact a development, it is appropriate for the impact fee formula to incorporate a credit calculation to account for future taxes that pay for debt service on outstanding bond obligations. The credit acts to adjust the fee so that new development is not charged twice for the same capacity-related costs.

Past Payment Credits (for vacant land) – See details in Tables I-9 and I-10

Credit calculations have been performed for two school bonds in Newmarket. The first credit is for the 1997 series of bonds that covered the upgrade of the high school, asbestos abatement and

Part I. Public School Impact Fees

the creation of four classrooms. It is assumed that about 30% of the project cost was related to capacity-related expenditures that resulted in the addition of classrooms. Therefore credits for that bond issue are computed on 30% of the local share of debt service payments.

A second credit has been calculated for the bonds issued in 1986 (later refunded in 1991) for the original construction of the elementary school. As this new construction was entirely to provide for facility capacity, the entire bonded amount is subject to the credit calculation. For the purpose of credits, "past payments" are considered to be those occurring from 1987 through 2000 and future payments are those due in the years 2001 – 2007. The present value of past and future payments have been computed at a six percent discount or interest rate.

Past payment credits were calculated on the basis of an average land value per acre for undeveloped residential land of \$8,029 per acre (derived from analysis of Newmarket assessment data. The assumed acreage per single family detached home, derived from actual construction history in Newmarket, is assigned to a typical home site of about two acres. Relative land value and associated past payment credits per unit for other housing types are assumed to be proportional to their average assessed value following construction. Credits for past payments are summarized as:

$$\begin{aligned} & \$ 0.91 \text{ per thousand assessed valuation (high school upgrade)} \\ & + \$31.53 \text{ per thousand assessed valuation (elementary school)} \\ & = \$32.44 \text{ per thousand value applied to value of raw land per unit} \\ & @ \$16,058 \text{ raw land value of 2 acre site for single family unit} \\ & = \$ 521 \text{ for a single family home (rounded)} \end{aligned}$$

(See Table I-9 for details of credit calculations for other types of units.)

Future Payment Credits (see details in Tables I-9 and I-10)

Credits for future payments are based on the net present value of local property tax payments toward remaining bonded debt payments. The credit is calculated in terms of a present value that is expressed as a rate per thousand dollars of net local assessed valuation. That amount is applied to the expected average value of a new housing unit. Total principal and interest payments on bonded debt, less State building aid as 30% of the principal due on the bonds, results in net local debt service payments for capacity improvements. Credits for future payments are summarized as:

$$\begin{aligned} & \$1.24 \text{ per thousand assessed value (high school upgrade)} \\ & + \$2.87 \text{ per thousand assessed value (elementary school)} \\ & = \$4.11 \text{ per thousand assessed value of completed housing unit} \end{aligned}$$

For a new single family (assumed to have an assessed value of \$160,000, the future payment credit is \$657. Credits for other unit types are illustrated in Tables I-9 and I-10.

In the case of a single family detached home, total credits for past and future payments are equal to \$521 (past) + \$657 (future) = an \$1,178 total credit allowance.

Part I. Public School Impact Fees

TABLE I-9

CREDIT CALCULATION A							
IMPACT FEE CREDIT CALCULATION FOR PROPERTY TAX PAYMENTS							
NEWMARKET SCHOOL DISTRICT							
Bonds: 1997 Series A and B - High School Upgrade, Asbestos Abatement, and Creation of 4 classrooms							
Assume that about 30% of total bond cost was related to capacity-related expenditures (classrooms added)							
State Aid To District:		30.00% Of Principal Due on Bonds					
Discount Rate:		6.00%					
Fiscal Year	Total Principal Payment	Total Interest Payment	Total Payment	Creditable Amount Est. @ 30% of Total	Less State Bldg Aid @30% of Creditable Portion of Principal	Net Local Debt Service for Capacity Imp.	Present Value of Past Payments @6% Interest
PAST PAYMENTS							
1998	\$255,000	\$128,605	\$383,605	\$115,082	(\$22,950)	\$92,132	\$103,520
1999	\$255,000	\$105,415	\$360,415	\$108,125	(\$22,950)	\$85,175	\$90,286
2000	\$255,000	\$93,620	\$348,620	\$104,586	(\$22,950)	\$81,636	\$81,636
PV of Past Payments:							\$275,441
Net Local Assessed Valuation October 2000:							\$301,734,644
Past Payment Credit Per \$1000 Land Value							\$0.91
Average Land Valuation/Acre: Undeveloped Residential Land							\$8,029
Credit Per Acre Raw Land							\$7.33
Acres Per Unit for Single Family Detached Home:							2.00
Past Payment Credit for Single Family Unit							\$15
FUTURE PAYMENTS							
2001	\$255,000	\$81,635	\$336,635	\$100,991	(\$22,950)	\$78,041	
2002	\$255,000	\$69,650	\$324,650	\$97,395	(\$22,950)	\$74,445	
2003	\$245,000	\$57,665	\$302,665	\$90,800	(\$22,050)	\$68,750	
2004	\$245,000	\$46,150	\$291,150	\$87,345	(\$22,050)	\$65,295	
2005	\$245,000	\$34,635	\$279,635	\$83,891	(\$22,050)	\$61,841	
2006	\$245,000	\$23,120	\$268,120	\$80,436	(\$22,050)	\$58,386	
2007	\$245,000	\$11,575	\$256,575	\$76,973	(\$22,050)	\$54,923	
Total	\$2,500,000	\$652,070	\$3,152,070	\$945,624	(\$225,000)	\$720,624	
(FINAL PAYMENT IN 2007)							
Net Present Value of Future Payments (2001-2007) @ 6% discount rate:							\$373,221
Net Local Assessed Valuation October 2000:							\$301,734,644
Credit per thousand assessed value of completed home:							\$1.24
CREDIT CALCULATIONS FOR THIS BOND (PER DWELLING UNIT)							
	Credit For Past Payments	Avg Value Per New Dwelling Unit	Credit For Future Payments	Total Credits for This Bond			
Single Family Detached	\$15	\$160,000	\$198	\$213			
Single Family Attached (Townhouse)	\$9	\$100,000	\$124	\$133			
Duplex & 2 Unit Structures	\$7	\$75,000	\$93	\$100			
Multifamily Structures 3-4 Units	\$6	\$60,000	\$74	\$80			
Multifamily Structures 5+ Units	\$6	\$60,000	\$74	\$80			
Manufactured Housing	\$8	\$80,000	\$99	\$107			

Part I. Public School Impact Fees

TABLE I-10

CREDIT CALCULATION B						
IMPACT FEE CREDIT CALCULATION FOR PROPERTY TAX PAYMENTS						
NEWMARKET SCHOOL DISTRICT						
Bonds: 1991 Refunding of 1986 Series C - Elementary School Construction						
State Aid To District:		30.00% Of Principal Due on Bonds				
Discount Rate:		6.00%				
Fiscal Year	Principal Payment	Interest Payment	Total Payment	Less State Bldg Aid @ 30% of Principal	Net Local Debt Service for Capacity Imp.	Percent Value of Past Payments @6% Interest
PAST PAYMENTS						
1987	\$270,000	\$354,426	\$624,426	(\$81,000)	\$543,426	\$1,159,088
1988	\$265,000	\$347,935	\$612,935	(\$79,500)	\$533,435	\$1,073,376
1989	\$265,000	\$334,338	\$599,338	(\$79,500)	\$519,838	\$986,807
1990	\$265,000	\$319,415	\$584,415	(\$79,500)	\$504,915	\$904,226
1991	\$265,000	\$303,433	\$568,433	(\$79,500)	\$488,933	\$826,041
1992	\$265,000	\$241,836	\$506,836	(\$79,500)	\$427,336	\$681,109
1993	\$265,000	\$256,332	\$521,332	(\$79,500)	\$441,832	\$664,353
1994	\$265,000	\$251,413	\$516,413	(\$79,500)	\$436,913	\$619,769
1995	\$265,000	\$233,103	\$498,103	(\$79,500)	\$418,603	\$560,186
1996	\$265,000	\$214,245	\$479,245	(\$79,500)	\$399,745	\$504,669
1997	\$265,000	\$195,083	\$460,083	(\$79,500)	\$380,583	\$453,280
1998	\$260,000	\$175,655	\$435,655	(\$78,000)	\$357,655	\$401,861
1999	\$260,000	\$156,340	\$416,340	(\$78,000)	\$338,340	\$358,640
2000	\$260,000	\$137,025	\$397,025	(\$78,000)	\$319,025	\$319,025
PV of Past Payments:						\$9,512,430
Net Local Assessed Valuation October 2000:						\$301,734,644
Past Payment Credit Per \$1000 Valuation						\$31.53
Average Land Valuation/Acre: Residential Land Including Current Use						\$8,029
Acres Per Unit for Single Family Detached Home:						2.00
Past Payment Credit for Single Family Unit						\$506
FUTURE PAYMENTS						
2001	\$260,000	\$117,450	\$377,450	(\$78,000)	\$299,450	\$221,450
2002	\$260,000	\$97,875	\$357,875	(\$78,000)	\$279,875	\$201,875
2003	\$260,000	\$78,300	\$338,300	(\$78,000)	\$260,300	\$182,300
2004	\$260,000	\$58,725	\$318,725	(\$78,000)	\$240,725	\$162,725
2005	\$260,000	\$39,150	\$299,150	(\$78,000)	\$221,150	\$143,150
2006	\$260,000	\$19,575	\$279,575	(\$78,000)	\$201,575	\$123,575
(final)						
Net Present Value of Future Payments (2001-2006) @ 6% discount rate:						\$864,625
Net Local Assessed Valuation October 2000:						\$301,734,644
Future Payment Credit per \$1,000 Assessed Value Completed Unit						\$2.87
CREDIT CALCULATIONS FOR THIS BOND (PER DWELLING UNIT)						
	Credit For Past Payments	Avg Value Per New Dwelling Unit	Credit For Future Payments	Total Credits For This Bond		
Single Family Detached	\$506	\$160,000	\$459	\$965		
Single Family Attached (Townhouse)	\$316	\$100,000	\$287	\$603		
Duplex & 2 Unit Structures	\$237	\$75,000	\$215	\$452		
Multifamily Structures 3-4 Units	\$190	\$60,000	\$172	\$362		
Multifamily Structures 5+ Units	\$190	\$60,000	\$172	\$362		
Manufactured Housing	\$253	\$80,000	\$230	\$483		

Part I. Public School Impact Fees

The estimated assessed value of new dwelling units was derived from cross-tabulation of the property tax base to compute an average assessed value of a new housing unit. Since there were no multifamily units of recent construction, the value of newer units was estimated based on the undepreciated building value shown in assessment records, plus land value of the site to generate a value estimate for newly constructed units. A summary of the total credits past and future by structure type is illustrated in the table below (Table I-11).

TABLE I-11 – Credit Summary

Structure Type	Average Assessed Value Per New Unit	Past Payment Credit	Future Payment Credit	Total Credits for Taxes
Single Family Detached	\$160,000	\$ 521	\$ 657	\$1,178
Single Family Attached (Townhouse)	\$100,000	\$ 326	\$ 411	\$ 737
Two-Unit Structures	\$75,000	\$ 244	\$ 308	\$ 552
Multi-family 3-4 Units	\$60,000	\$ 195	\$ 246	\$ 441
Multi-family 5+ Units	\$60,000	\$ 195	\$ 246	\$ 441
Manufactured Housing	\$80,000	\$ 261	\$ 329	\$ 329

Summary of Fee Computation and Assessment Schedule

Table I-12 below represents the impact fee assessment schedule that may be assessed to new dwelling units under the methods set forth in this analysis. Table I-13 (following page) summarizes all of the elements of the impact fee computation on a single chart and shows the capital costs, State aid, property tax credits, and the resulting net impact fee for each type of housing unit. Based on this approach, the impact fees that may be assessed to new development for a proportionate share of school capital facility costs are:

TABLE I-12 – Impact Fee Assessment Schedule

Structure Type	School Impact Fee per Dwelling Unit
Single Family Detached	\$ 3,418
Single Family Attached (Townhouse)	\$ 2,197
Two-Unit Structures	\$ 2,963
Multi-family 3-4 Units	\$ 1,489
Multi-family 5+ Units	\$ 743
Manufactured Housing	\$ 1,770

TABLE I-13 - SUMMARY ASSUMPTIONS AND IMPACT FEE CALCULATIONS

SCHOOL FACILITIES IMPACT FEE SCHEDULE BY DWELLING UNIT TYPE - 2000
TOWN OF NEWMARKET

Type Construction- Units In Structure	School Construction: Spatial Capacity Impact Per Housing Unit																
	Enrollment per Housing Unit					Floor Area Per Pupil					Capital Cost @ Indicated \$/Sq. Ft.						
	By Local Grade Grouping		6-12		Total Public Schools	K-5		6-12		Jr./Sr. High	Overall Average						
Single Family Detached	Elementary	0.247	Jr./Sr. High	0.262	0.509	Elementary	91	Jr./Sr. High	124	6-12	\$110	Elementary	\$2,472	Jr./Sr. High	\$4,223	Overall Average	\$6,695
Single Family Att. Or	Elementary	0.209	Jr./Sr. High	0.137	0.346	Elementary	91	Jr./Sr. High	124	6-12	\$110	Elementary	\$2,092	Jr./Sr. High	\$2,208	Overall Average	\$4,300
2 - Unit Structures	Elementary	0.169	Jr./Sr. High	0.212	0.381	Elementary	91	Jr./Sr. High	124	6-12	\$110	Elementary	\$1,692	Jr./Sr. High	\$3,417	Overall Average	\$5,109
Multifamily 3-4 Units	Elementary	0.114	Jr./Sr. High	0.104	0.218	Elementary	91	Jr./Sr. High	124	6-12	\$110	Elementary	\$1,141	Jr./Sr. High	\$1,676	Overall Average	\$2,817
Multifamily 5+ Units	Elementary	0.078	Jr./Sr. High	0.059	0.137	Elementary	91	Jr./Sr. High	124	6-12	\$110	Elementary	\$781	Jr./Sr. High	\$951	Overall Average	\$1,732
Manufactured Housing	Elementary	0.102	Jr./Sr. High	0.149	0.251	Elementary	91	Jr./Sr. High	124	6-12	\$110	Elementary	\$1,021	Jr./Sr. High	\$2,402	Overall Average	\$3,423

Type Construction- Units In Structure	Credits - Past Payments on Capacity										Credit - Future Payments For Outstanding Debt							
	District Capital Cost Per Unit					Improvements					Outstanding Debt							
	State Building Aid @ % of Principal (1)		6-12		Total Grades	Jr./Sr. High School		Total Public Schools		Total Public Schools		Paid on Outstanding Debt Service						
Single Family Detached	K-5 (1)	34%	6-12	30%	K-12	Elementary School	\$1,640	Jr./Sr. High School	\$2,956	Total Public Schools	\$4,596	Elementary School	(\$459)	Jr./Sr. High School	(\$198)	Total Public Schools	(\$657)	
Single Family Att. (Townhouse)	Elementary School	\$1,388	Jr./Sr. High School	\$1,546	Total Public Schools	\$2,934	Elementary School	(\$306)	Jr./Sr. High School	(\$15)	Total Public Schools	(\$521)	Elementary School	(\$287)	Jr./Sr. High School	(\$124)	Total Public Schools	(\$411)
2 - Unit Structures	Elementary School	\$1,123	Jr./Sr. High School	\$2,392	Total Public Schools	\$3,515	Elementary School	(\$316)	Jr./Sr. High School	(\$9)	Total Public Schools	(\$326)	Elementary School	(\$215)	Jr./Sr. High School	(\$93)	Total Public Schools	(\$308)
Multifamily 3-4 Units	Elementary School	\$757	Jr./Sr. High School	\$1,173	Total Public Schools	\$1,930	Elementary School	(\$237)	Jr./Sr. High School	(\$7)	Total Public Schools	(\$244)	Elementary School	(\$172)	Jr./Sr. High School	(\$74)	Total Public Schools	(\$246)
Multifamily 5+ Units	Elementary School	\$518	Jr./Sr. High School	\$666	Total Public Schools	\$1,184	Elementary School	(\$190)	Jr./Sr. High School	(\$6)	Total Public Schools	(\$195)	Elementary School	(\$172)	Jr./Sr. High School	(\$74)	Total Public Schools	(\$246)
Manufactured Housing	Elementary School	\$678	Jr./Sr. High School	\$1,681	Total Public Schools	\$2,359	Elementary School	(\$253)	Jr./Sr. High School	(\$8)	Total Public Schools	(\$261)	Elementary School	(\$230)	Jr./Sr. High School	(\$99)	Total Public Schools	(\$329)

Type of Construction: Units In Structure	Impact Fee Per Dwelling Unit Assessment Schedule		
	Local Cost Per Unit	Property Tax Credits	Impact Fee Assessment
Single Family Detached	\$4,596	(\$1,178)	\$3,418
Single Family Att. or Townhouse	\$2,934	(\$737)	\$2,197
2 - Unit Structures	\$3,515	(\$552)	\$2,963
Multifamily 3-4 Units	\$1,930	(\$441)	\$1,489
Multifamily 5+ Units	\$1,184	(\$441)	\$743
Manufactured Housing	\$2,359	(\$590)	\$1,770

(1) 30% standard State building aid adjusted upward to account for 75% State building aid for Kindergarten portion of facility.

Discounting the fees at different rates would make the fees disproportionate with respect to their relative demographic and fiscal impact on capital costs. In considering discounted fee schedules, it should be recognized that any type of further discounts will reduce the amount of impact fee revenues collected for the purposes of accommodating growth, thus shifting the burden back to the total tax base.

Notes on Application

This methodology has utilized US Census definitions to classify structural types. In general, single-family attached housing represents townhouse construction in which there is a complete wall separation from roof to basement between each individual row unit. Construction of this type, regardless of the number of attached units, should be assessed under the "single family attached (townhouse)" category. Impact fees are provided for duplex and two unit structures, and for three to four unit buildings. These two to four-unit buildings tend to have higher enrollment per unit than larger complexes of walk-up or garden-style apartments. Garden-style apartments or condominiums should be assessed under the "five or more unit structure" category. For all types of homes, the impact fee is assessed per dwelling unit, with the amount per unit based on the *structural type* and not on *tenure* (owner vs. renter occupancy).

It has been assumed that the Impact Fee Ordinance that implements the school impact fees will contain waiver provisions for housing for the elderly, or for units in projects which have been lawfully restricted to occupancy by households with at least one person 55 and over for a long term period. In these cases, the unit should be excused from the school impact fee because there would be no rational nexus between the assessment of a school impact fee and the probable impact of the development on enrollment.

Future updates of the impact fee assessment methodology and schedule should incorporate consideration of all elements of the formula. Simple adjustments using the consumer price index to adjust the overall fee are not recommended, as the CPI is unlikely to reflect changes in the variables used in the impact fee assessment. The elements of this methodology can be updated periodically using the most recent available information, including future U. S. Census data when released for 2000, school enrollment updates, and revised estimates of total occupied units by structure type. New information can be used to adjust the formula to reflect:

- Changes in total enrollment by grade
- Changes in the number of housing units and average pupils per unit
- Gross square foot area required per pupil
- Cost per square foot of new school facility space
- State aid for building construction
- Past and future debt service on capacity-related construction projects

At the point where specific proposals for new schools or additions are under approved, the methodology should be updated with respect to gross floor area per pupil; cost per square foot; debt service and anticipated impact fee revenues.

Part I. Public School Impact Fees

References - School Reports Relating to Capacity Needs:

December 1995; Center for Educational Field Services, A Report to the Newmarket School District on Enrollment Projections and Evaluation of School Facilities.

January 15, 1997; Dr. Mark Joyce and Dr. Berard Masse; Report for the Newmarket School District; Educational Specifications for a Grade 6-8 Middle/Junior High School and a Grade 9-12 High School.

March 1997; H. L Turner Group, Inc. Building Improvement Plan – Junior/Senior High School – Newmarket School District.

PART II

**IMPACT FEES FOR
PUBLIC RECREATION
FACILITIES**

Town of Newmarket

PUBLIC RECREATION FACILITIES IMPACT FEE

Authority

New Hampshire RSA 674:21,V authorizes municipalities to assess impact fees to new development for the cost of "...public recreational facilities not including public open space". Impact fees may be used to recoup the costs of capital improvements made in anticipation of the demands of future growth or can be used to fund future improvements that provide capacity to absorb new development. The cost of simply upgrading or improving existing recreation facilities is not chargeable in the form of an impact fee assessment.

Limitations

Recreation impact fee assessments cannot be based on the cost to provide facilities that are already needed by the existing population of the Town. Thus if the inventory of recreation facilities has serious deficiencies with respect to current needs, these deficiencies cannot be rectified at the expense of new development in the form of impact fees.

An important limitation specified within the New Hampshire authorizing legislation is the prohibition on including *public open space* costs within an impact fee assessment. Since many recreation spaces and facilities include multiple functions embracing both active recreation and sports as well as passive uses of open space, it is necessary to interpret this statutory restriction in a way that distinguishes public open space from public recreation facilities. The level of active recreational sports uses, the degree of improvements to the land, and the presence of developed facilities on the property are reasonable means to define "recreational facilities" within the meaning of RSA 674:21, V.

Conservation lands and easements that provide public open space for the purpose of water and wetland conservation, natural habitat and wildlife preservation, aesthetics or view preservation sometimes also support passive recreational uses such as walking and hiking. While these spaces are supportive of some forms of recreation, such conservation lands serve primarily open space objectives, and are not considered to be *recreation facilities* for the purposes of this impact fee study. While providing the valuable function of open space preservation, such lands are not significantly developed or improved with capital facilities or equipment, and the recreation uses they support tend to be passive and subordinate to their conservation functions.

Existing and Future Conditions

In order to distinguish between existing needs of the current population, and growth related needs in Newmarket, the quantity of recreation facilities required at different population thresholds needs to be estimated in order to calculate a reasonable level of growth-related facility needs and costs.

Use of "Standards"

There are several sources of reference standards for recreation facility needs defined in relation to a service area population. These include:

1. New Hampshire Outdoors (1994) a publication of the Office of State Planning, which sets forth goals for desirable ratios of facilities per thousand population.
2. Recreation, Park and Open Space Standards and Guidelines (1983) published by the National Recreation and Park Association (NRPA); and
3. Locally defined standards based on experience with recreational facility demands at the community level.

In its most recent handbook on recreation program and facility development, the NRPA published Park, Recreation, Open Space and Greenway Guidelines in December 1995. In this NRPA handbook, the use of rigid standards is discouraged in favor of a community needs assessment approach. A comparison of the published standards contained in NH Office of State Planning publications New Hampshire Outdoors and Guide to Municipal Recreation (September 1995) to actual facilities supported by New Hampshire communities indicates that the desired ratios recommended by planning publications often far exceed the quantity of facilities actually supported by community recreation programs. Therefore local judgment is essential in interpreting or applying any ratio standard for recreation facilities. However, a numerical standard for recreation facilities is necessary to impact fee assessment to allow a differentiation between existing and future facility needs.

Local Facility Inventory

No detailed local needs assessment has been completed or quantified by the Town of Newmarket to determine the exact number and type of recreation facilities that are required for it to adequately serve its existing or future population. A recreation needs survey was conducted in Newmarket in 1992, but its scope was limited to an identification of needs and uses related to the development of a community center.

An inventory of existing recreation facilities in Newmarket is shown in Table II-1 below. These include only the active recreation facilities of the Town and do not include open space the passive park lands. Existing public recreation facilities are centered on the Leo Landroche Field located adjacent to the Community Center. Increasingly, Newmarket's recreational facilities are being concentrated between this location and the existing schools in what is emerging as a centralized recreation complex. The acreage represented in Table II-1 includes estimates of the usable acreage of active facilities, as provided by the Recreation Department. This acreage inventory may not match other sources that are based on total gross acreage of the parcels owned.

TABLE II-1: INVENTORY OF RECREATION FACILITIES IN NEWMARKET

LOCATION AND TYPE		FACILITIES AND IMPROVEMENTS													
		Gymnasium	Basketball Courts (Outdoor)	Basketball Courts (Indoor)	Tennis Courts	Baseball Fields	Softball Fields	Soccer Fields	Volleyball Court	Swimming Area (Beach)	Swimming Pool	Playgrounds	Picnic Tables *	Boat Launch	
NAME OF AREA OR FACILITY	Usable Acreage	Primary Recreation Use/Other Uses on Site													
ACTIVE RECREATION AREAS/FACILITIES															
Community Center	1	Rec/Social Center (1)	1						1						
Beaulieu Field	2	Sports				1									
Beanie Howcroft Field	4	Field Sports (2)				1	1	2							
Leo Landroche Memorial Field	11	Field Sports (3)				1	1	1	1			1	6		
Durrell Woods	4	Field Sports													
Newmarket Elementary	(4)				1							1			
Newmarket Jr/Sr HS	(4)		1		1										
Total Inventory	22		1	1	2	0	3	2	3	2	0	0	2	6	0
			(1) Owned by Housing Authority (2) 2 soccer fields are short youth fields overlaid between baseball fields. (3) 1 full size soccer field, overlays baseball diamond (4) The gyms also provide indoor basketball courts (*) Additional picnic areas are found in passive public parks												
PASSIVE PUBLIC RECREATION AREAS															
Piscassic St. Park	4	Boat Launch											4	1	
Riverbend Park	1	Walkways/picnic													
Waterfront Park	1	Walkways/picnic													1
Inventory-Passive Parks	6														
TOTAL PUBLIC PARK AND RECREATION FACILITIES			1	1	2	0	3	2	3	2	0	0	2	10	2
CONSERVATION AREAS															
Heron Point Sanctuary	10	Walking Platform													

Newmarket lacks a public swimming area or swimming pool for residents, and it has no public tennis courts. According to the Recreation Director, there were four public tennis courts at one time, but they were removed in 1972 to expand parking at the junior/senior high school.

Given an estimated 2000 population of 8,300 persons, the number of recreation facilities in Newmarket would be considered limited with respect to most standards, in relation to the size of the Town. Based on the draft Master Plan for 2000, there is an expressed desire to obtain more land for several more fields to satisfy future public recreation demands, but there is no written plan or needs analysis that quantifies the number of recreation facilities or the amount of investment required to meet current vs. future needs. It is apparent that some additional playing fields are needed just to meet the needs of the current population.

The draft Newmarket Master Plan (2000) mentions several development goals for the next 10 years envisioned to include:

1. A new handicapped accessible playground within the Leo Landroche Field area;
2. A new soccer field complex to take pressure off existing field usage;
3. A new indoor gymnasium (expansion at the Community Center)
4. A new swimming pool facility;
5. A skateboard park.

Based on information exchanged in an interview, the Recreation Director would like to see another 12 acres acquired for up to four fields, which he believes should provide for the needs of the Town for the foreseeable future (perhaps 20 years+). A swimming pool is seen as a desirable facility, but is a more distant priority relative to more immediate needs. For impact fee assessment, the long-term needs of the Town need to be quantified in terms of facility needs per thousand population so that Newmarket has a measure of demand to allocate capital costs between existing and new development.

Recreation Facility Needs based on Population Growth

Table II-2 compares various reference standards for recommended quantities of facilities per thousand population to the actual averages for New Hampshire's largest cities. Despite their age, the 1983 NRPA are actually more representative of the actual inventory of facilities maintained by the cities than the ratios recommended by the standards contained in New Hampshire Outdoors.

TABLE II-2 – TYPICAL RECREATION STANDARDS VS. ACTUAL AVERAGES FOR MAJOR NH CITIES

Comparison of Standards for Recreation Facilities Per 1,000 Population

Recreation Facility	Commonly Applied Standards		Actual Averages - Selected Cities		
	NH Outdoors	NRPA, 1983	Nashua	Manchester (1)	Concord (1)
Baseball	1.10	0.20	0.10	0.10	0.11
Youth Baseball	---	0.20	0.21	0.21	0.19
Softball	---	0.20	0.21	0.19	0.22
Soccer Fields	0.16	0.10	0.18	0.20	0.20
Football Fields	0.10	0.05	0.06	0.08	0.06
Basketball Courts	0.80	0.20	0.16	0.30	0.33
Tennis Courts	0.95	0.50	0.30	0.36	0.53
Swimming Pools	0.14	0.05	0.05	0.04	0.20
Ice Skating Rinks	0.14	---	0.11	not avail.	not avail.
Gymnasiums	0.25	---	0.21	not avail.	not avail.

(1) Based on inventories compiled in City of Manchester Master Plan, 1993, and City of Concord Recreation Plan; ratios based on OSP 1996 estimated population.

The strict application of some published recreation standards to the population of a community can often result in an overestimate of the actual number of recreation facilities that are needed or

can be reasonably supported by the community. The demand for certain types of field sports has changed since some of these standards were developed in the late 1970s and early 1980s. For example, demand for soccer has increased significantly since the early 1980s, while the popularity of tennis has tended to decline. It is essential that communities develop their own working standards to reflect local demand. After reviewing of the future goals of the Town's Recreation Department, and experience with various reference standards, it appeared that a series of ratios derived from a recent recreation study in Nashua might be applicable in Newmarket.

Some of the planning standards utilized in the Nashua Recreation Plan 1999 (prepared by Woodward Planning Consultants, Inc. in association with Bruce C. Mayberry, Planning Consultant) have been used here to estimate and project recreation facility needs for Newmarket. These standards were developed for the City of Nashua to reflect future facility needs projected according to a review of available standards, surveys of recreation officials and leagues in the city and observations of the city planning staff. These standards were applied to the Newmarket population for 2000 and 2015 to estimate recreation facility needs, except for the gymnasium and playground facilities.

Playground needs were estimated using the NRPA 1983 standards. For gymnasiums, the assumption was made that the proposed gym, in combination with an existing gym at the high school, would be adequate for the year 2015 population, indicating a ratio of 0.20 gyms per 1000 population. These standards and their implications were reviewed by the Recreation Director to assure that the resulting need estimates are reasonable and appropriate for Newmarket.

Application of the selected standards is illustrated in Table II-3. In Table II-3, the selected standards are applied to the current population (estimated at 8,330) to estimate current needs and deficiencies; the same ratios are then applied to the projected 2015 population of 10,600 to project the number needed in the future. Where current needs are greater than the existing inventory, there is a deficiency. The difference between current needs and future needs in the horizon year is the amount attributable to growth.

Application of these selected standards indicate that the Town should probably have an additional three to four fields for soccer and softball/youth baseball little league today as well as an additional basketball court. Under the recommended standards at least three tennis courts ought to be provided so there is public access to this sport. An additional two playgrounds are also necessary to meet current year needs and portions of a swimming pool and a gymnasium are allocable to current recreation facility deficits. As the Town has no public tennis courts (there are private courts in town), and has neither a public beach nor a swimming pool, these facilities have been included in the projected inventory as basic elements supporting a full recreation program.

Applying the same recreation standards to the projected year 2015 population of 10,600 persons results in an estimate of the total facilities needed to service that horizon year population. Total acreage requirements are projected based on recommended facility sizes (NRPA, 1983) for the current year and the planning design year of 2015. The model indicates that a minimum of four acres ought to be acquired to meet today's recreation demands; an additional six to seven acres will be needed to allow for facility demands in the horizon year 2015.

TABLE II-3: APPLICATION OF STANDARDS TO ESTIMATE FACILITY NEEDS AND COST OF GROWTH

RECREATION FACILITY NEEDS BASED ON PER CAPITA STANDARDS

Recreation Facilities	Standard Used		Existing Local Facilities			Facility Needs Based on Pop.			Capital Cost Estimates			Total Investment Required In Period
	Per 1000 Population	Reference Standard	Number of Units	Existing Avg Per Thousand Population	Total For 2000 Population @ 8,330	Additional Need for Year 2000	Total for 2015 Population 10,600	Growth-Related Needs	Total Capital Cost/Unit (1)	Existing Investment Needed	Growth-Related Expense	
Baseball Diamond/Field	0.16	Neshua	3	0.36	1.3	(1.7)	1.7	0.4	\$75,000	None	\$30,000	\$30,000
Sofball/Youth Baseball Fields	0.63	Neshua	2	0.24	5.2	3.2	6.7	1.5	\$75,000	\$240,000	\$112,500	\$352,500
Basketball Courts-Outdoor Hard	0.20	Neshua	1	0.12	1.7	0.7	2.1	0.4	\$40,000	\$28,000	\$16,000	\$44,000
Soccer Fields (1)	0.27	Neshua	1	0.12	2.2	1.2	2.9	0.7	\$75,000	\$90,000	\$2,500	\$142,500
Tennis Courts	0.36	Neshua	0	0.00	3.0	3.0	3.8	0.8	\$40,000	\$120,000	\$32,000	\$152,000
Gymnasiums (2)	0.20	Local need	1	0.12	1.7	0.7	2.1	0.4	\$750,000	\$325,000	\$300,000	\$825,000
Swimming Pool (Seasonal) (3)	0.09	Neshua	0	0.00	0.7	0.7	1.0	0.3	\$350,000	\$245,000	\$105,000	\$350,000
Playgrounds (w/equipment)	0.50	NRPA	2	0.24	4.2	2.2	5.3	1.1	\$57,000	\$125,400	\$62,700	\$188,100
Land Acquisition												
Usable Acreage Needed To Support Outdoor Facilities			18.0	2.16	22.1	4.1	28.7	6.6	\$14,000	\$56,700	\$92,883	\$149,583

Total Capital Cost \$1,430,100
 Less Grants/Donations (\$682,550)
 Net Local \$747,550
 New Growth-Number of Residents 2,270
 Growth-Related Cost Per New Resident \$186

(1) The one regulation high school soccer field is included in this inventory. There are also two short youth fields overlaid between baseball fields (not counted in this inventory).

(2) There is one existing gym at the High School; assumes that the completion of the gym at Community Center will be sufficient for the 2015 population

(3) Cost based on 3 pools constructed in 2000 for Rochester NH Recreation Dept. - cost for a seasonal 25 yard, 6-lane Gunite pool was \$350,000.

Minimum Land Area Required to Support Facilities

Overall, the land area requirements for the number of facilities projected indicate that the Town should acquire *at least* eleven (11) acres to meet existing and future outdoor facility needs for horizon year 2015. This should be viewed as a minimum goal for acquisition. The pace of private real estate development can severely limit municipal opportunities to acquire needed recreation land of sufficient size and development capability in locations that are convenient to the population. Therefore, land acquisition is best accomplished well in advance of the need for facility development. Certain strategic acquisitions may need to be made at opportune times as land becomes available in order to assemble parcels in locations that are appropriate to the Town's needs.

The total usable acreage needed to support existing and future recreation facilities in Newmarket was estimated using facility dimensions and minimum recommended acreage for facilities published in the National Recreation and Park Association's 1983 publication Recreation, Park and Open Space Standards and Guidelines. (See Table II-4 below). Raw land acquisition costs have been estimated using an average acquisition cost of \$14,000 per acre.

TABLE II-4 – MINIMUM LAND AREA FOR ACTIVE RECREATION

MINIMUM LAND AREA NEEDS FOR NEWMARKET'S OUTDOOR RECREATION FACILITIES					
Facility Type	Land Area Per Facility*	Unit	Acres Available Now	Acreage Needed for Facilities	
				At Current (2000) Population	At Projected 2015 Population
Baseball Diamond	3.50	Acres		4.55	5.95
Youth/Littleleague/Softball Fields	2.00	Acres	Existing	10.40	13.40
Outdoor Basketball - Hard Court	6,000	Sq. Ft	Useable	0.23	0.29
Soccer Fields	2.10		Acres	4.62	6.09
Tennis Court	7,200	Sq. Ft	For Active	0.50	0.63
Swimming Pool	1.00	acres	Rec. Facilities	0.70	1.00
Playground	0.25	acres		1.05	1.33
Total Outdoor Facilities			18.00	22.05	28.68
Min. additional area to support future needs					10.68

* Based primarily on NRPA, 1983 recommended range of acreage/dimensions. Average area needed per playground estimated by consultant.

Impact Fee Derivation

In the far right portion of Table II-3, an average capital cost per unit was assigned to each of the facility types in the recreation inventory. The costs of development can vary from one site to another based on site conditions, quality of materials and installation, extent of ancillary facilities and parking. Cost estimates per facility were reviewed for

reasonableness, based on local experience, with the Recreation Director. To maintain conservative cost figures, the community center expansion has been estimated at a minimum cost of \$750,000, but could cost up to \$1 million. The estimated cost of a swimming pool is based on recent construction (2000) in Rochester, where three outdoor pools were constructed. The City of Rochester incurred a cost of \$350,000 for a typical 25-yard, 6-lane outdoor swimming pool, inclusive of equipment and changing rooms. This cost has been used to represent a prototype cost for a community pool in Newmarket.

Existing and growth-related capital costs are projected in Tables 3 and 4 based on the cost to meet current year deficits (existing investment required) and the cost to meet growth-related recreation facility demands. The total capital investment required is estimated at approximately \$ 2.23 million to meet year 2015 demands. A significant portion of projected facility cost is attributable to the planned gymnasium addition to the Community Center. Approximately one third of the total investment needed (roughly \$804,000) represents the cost of meeting *growth-related* demands, while the remaining two thirds (about \$1.43 million) is attributable to the cost of rectifying existing facility deficits. If an impact fee is to be assessed, these deficiencies must be rectified as part of an overall recreation facility development program.

In the past, the Town has been remarkably successful in obtaining various grants and donations to support facility development. For the purposes of impact fee assessment, it is assumed that this trend will continue and therefore it is assumed that:

- 50% of the gross facility development cost will be met by grants, donations and fundraising, with the exception of the proposed gymnasium.
- For the proposed gymnasium, it is assumed that 2/3 of the cost will be funded by grants, donations and fund raising (the current goal of the recreation department for fund raising).

Under these assumptions, approximately \$423,000 in net local cost would be attributable to meeting the needs of new development. Approximately 2,270 new residents would be accommodated by the facilities supported by this net expenditure (after grants and donations), representing an average amount per capita of \$186.

This impact fee would be supportable only if the Town makes reasonable efforts to rectify existing recreation facility deficits and to provide the facilities recommended for growth through the year 2015. Overall, the total capital investment required for both existing needs and growth-related costs would represent an average total expenditure averaging approximately \$149,000 per year (from all sources). Assuming that the gross amount of donations and grants were to amount to approximately \$1.06 million dollars [as assumed in Table II-3], then a net local government expenditure of about \$1.17 million over the period would be required, or about \$78,000 per year in local government

appropriations derived from a combination of sources including capital reserves, property taxes, user fees and impact fees.

It is possible that the expected amount of grants and donations would not be achieved at the projected level. However, by assuming that a high proportion of total costs will be defrayed by grants or donations, this model provides a conservative impact fee assessment based on the net local costs attributable to growth.

Credits for the Funding of Existing Deficiencies

If the Town is to support a recreation impact fee assessment on new development, it needs to assure that non-impact fee funds will be budgeted to rectify existing deficiencies. In Table II-3, the cost to provide the additional facilities already needed by the existing population in Newmarket under the selected standards was estimated at about \$1.43 million. Assuming that \$683,000 of this total would be derived from grants, donations and fund raising, \$748,000 would be needed from other local funds derived from property taxes (average of \$49,837 per year) over the 15-year period 2000-2015.

An expenditure of \$49,837 derived from property taxation would require a tax rate of \$0.16517 per thousand valuation, using the October 2000 net local assessed valuation of the Town. The net present value of this amount, discounted at 6% over 15 years, represents an equivalent present value of \$1.60 per thousand valuation. This amount has been applied to the estimated valuation of new dwelling units in Newmarket to provide a property tax credit for property tax costs that new development will bear to rectify existing facility deficiencies. The credit is deducted from the total growth-related capital cost per dwelling unit to arrive at a net impact fee.

Recreation Impact Fee Schedule

The recreation impact fee schedule (Table II-5) is based on \$186 per capita in growth-related local capital costs for recreation, less credits assigned at \$1.60 per thousand valuation of new housing units. The per capita cost of \$186 is multiplied by the number of persons per occupied dwelling unit (by type of structure) in Newmarket. Average persons per occupied unit are computed from 100% count Census data for Newmarket extracted from the 1990 Census. Credits are then computed and deducted as shown in Table II-5.

Under this scenario, the impact fee for a single family detached unit would be \$276 per home. Impact fees for other types of units are computed in proportion to household size, less credits for future property taxes paid toward rectifying deficiencies. The relatively high credit provided for single-family homes, based on valuation, results in a lower net impact fee for single detached units than for some other types of construction.

TABLE II-5 –IMPACT FEE SCHEDULE FOR RECREATION FACILITIES

Impact Fee Summary - Recreation				
Type Of Structure	Newmarket 1990 Average Persons Per Occupied Unit	Recreation Facility Local Capital Cost Attributed To Growth @ \$186 per capita	Less Credit for Property Taxes Needed to Rectify Existing Deficiencies	Impact Fee For Recreation Facilities
Single Detached	2.86	\$533	(\$257)	\$276
Single Attached (Townhouse)	2.60	\$485	(\$160)	\$325
Duplex/Two-Unit	2.54	\$473	(\$120)	\$353
3-4 Unit Structure	2.25	\$419	(\$96)	\$323
5+ Unit Structure	2.01	\$375	(\$96)	\$279
Manufactured Home	2.19	\$408	(\$128)	\$280
Credit Derivation				
Type Of Structure	Average Taxable Val. Per New Unit	Credit Allowance At \$1.60 Per \$1000 Valuation		
Single Detached	\$160,000	(\$257)		
Single Attached (Townhouse)	\$100,000	(\$160)		
Duplex/Two-Unit	\$75,000	(\$120)		
3-4 Unit Structure	\$60,000	(\$96)		
5+ Unit Structure	\$60,000	(\$96)		
Manufactured Home	\$80,000	(\$128)		

Approximately one third of the total recreation facility capital investment needed for the horizon year 2015 is attributable to new residential growth and development, while about two thirds is attributable to rectifying existing facility deficits.

The application of a recreation impact fee to new development in Newmarket is contingent on maintaining an adequate level of capital investment in providing additional recreation land and facilities that will be sufficient to remedy existing deficiencies, while also funding growth related needs project to the planning horizon year 2015.

The impact fee developed in this methodology is relatively low in part because of the need to make significant investments using non-impact fee funds to provide additional facilities needed by the existing population. The impact fee formula should be revisited if there is a significant change in capital improvement plans or expenditures. The fee system should also be updated periodically to keep pace with construction costs, and to make adjustments to other variables in the impact fee formula as new data becomes available.

PART III

**IMPACT FEES FOR
WASTEWATER TREATMENT
CAPACITY**

Town of Newmarket

III. WASTEWATER TREATMENT IMPACT FEE Town of Newmarket, New Hampshire

Authority

New Hampshire RSA 674:21, V authorizes municipalities to assess impact fees to new development for wastewater treatment and disposal facilities and sanitary sewers. Impact fees may be used to recoup the costs of capital improvements made in anticipation of the demands of future growth, or they may be used for future improvements to provide the capacity to absorb new development. The cost of simply upgrading or replacing existing system components is probably not chargeable to new development under an impact fee system as authorized by this statute, except where there is evidence that the improvement creates increased capacity to serve new development.

Existing and Future Conditions

The Newmarket Wastewater Treatment Plant currently accommodates an average daily flow of 0.64 million gallons per day (MGD); its treatment design capacity is rated at 0.85 MGD. Therefore existing demand represents about 75% of the design capacity, with about 25% available to support new development. At this time, a substantial increase in capacity is being planned for the year 2020.

Recent rates of growth and development, as well as a need to meet environmental quality standards for operation and discharge to the Lamprey River led Newmarket to undertake a comprehensive wastewater facilities plan update that considers the needs of existing and future development. A first draft report on long-term facility needs has been prepared by Underwood Engineers, Inc. (201 Facilities Plan Update, Newmarket, New Hampshire, SRF Project #CS-330162-05 - January 14, 2000). The intent of this study is to address existing deficiencies in the system, and to provide the capacity to meet the demands of anticipated growth through the year 2020. Based on estimated growth rates and land use modeling under existing zoning, the report indicates that the sewered population will increase from 6,818 in the year 2000 to 8,163 by the year 2020 (see Table III-1).

Table III-1

Year	Total	Sewered	% Sewered	Total Dwelling	
	Population	Population		Units	Sewered Units
1980	4,270	3,355	79%	1,838	1,444
1990	7,157	5,711	80%	3,286	2,596
2000	8,330	6,818	82%	3,332	2,727
2020	11,548	8,163	71%	4,619	3,265
Saturation	14,193	11,693	82%	5,677	4,677

Source: 201 Facilities Plan Update, First Draft, 1-14-2000, Underwood Engineers, Inc.

The existing treatment facilities were designed primarily to accommodate residential growth. Existing flow to the treatment plant from commercial/industrial sources is estimated to be only

about 10% of the total. However, a significant amount of additional treatment capacity in the future plan will be allocated to the expansion of industrial and commercial development opportunities in the Town of Newmarket in a major initiative to expand industrial land development and a related increase in non-residential taxable value.

Table III-2

Capacity Design Assumptions for Year 2020		
Design Year:	Gallons Per	
	Day	% of Total
Residential	470,000	37.2%
Commercial/Industrial	500,000	39.5%
Infiltration	290,000	22.9%
Septage	5,000	0.4%
Total	1,265,000	100.0%
 Existing Plant Design:	850,000 GPD	
 Increased Capacity:	415,000 GPD	
	48.8% Change	
 <i>Source: Data from 201 Facilities Plan Update First Draft 1-14-00, Underwood Engineers, Inc.</i>		

The future scenario for the year 2020 (see Table III-2) allocates approximately 40% of total system capacity to commercial and industrial development demands on the system. Existing sewerage treatment facilities are currently designed for 0.85 MGD average flow to the plant. The twenty-year design has been recommended at 1.265 MGD, representing a 49% increase in total capacity (including an allowance for infiltration).

Existing Development Policy

With respect to water and sewer utilities, it is the policy of Newmarket to require developers and/or property owners to pay for the cost of extensions of water and sewer lines necessary to service their developments. Funding for, or the actual construction of, such extensions may be required as a condition of subdivision and site plan approval, and may be required under the local ordinances and regulations governing these utilities. Such exactions sometimes include upgrades and improvements such as pump stations to service future development. In addition, the sewer ordinance authorizes existing permit fee charges, which are collected and allocated to a sinking fund for repair and replacement.

For the purposes of impact fee assessments for sewage treatment capacity, it is assumed here that these development policies will continue. Therefore, the cost of extending sewer lines, providing new interceptors to service new development locations within the Town, and the costs of other repair and replacement expenditures will be paid for through means other than the impact fee.

Capital Cost Basis for Impact Fee Assessment

In this methodology, we have sought to include in the impact fee assessment only the core capacity-related investments that serve all users on system. Under an impact fee system, any new development within the service area would pay a one-time capital impact fee at the time of development, representing its proportionate share of the cost of the capacity it consumes based on its predicted demand on the treatment system. The common unit of demand applied to residential and non-residential development is average gallons per day demand, generally calculated as the equivalent of water usage.

Existing Facilities

Based on an interview with Public Works Department personnel and on a review of the 201 Facilities Plan Update, certain existing facilities are included in the basis for impact fee assessment, as they will provide part of the system capacity needed to serve new development. Existing capital facilities comprising the core of the system's treatment capacity include:

- Wastewater treatment plant & related facilities
- The four major "core" interceptors
- Bay Road and Creighton Road pumping stations
- Force mains serving sewer basins 4 and 5 (areas subject to new development)

The capital value attributed to these facilities is based on several sources. The estimated replacement cost of existing facilities for the pump stations and force mains is based on the Newmarket Capital Improvement Program (CIP) and/or its insurance schedules for replacement cost. Estimated replacement cost for the primary and secondary treatment plant a dewatering facility are based on their original capital cost in the year of construction, updated to April, 2000 using construction cost indexes published in the Engineering News Record (ENR). [The index numbers provide a basis for estimating current year costs for facilities built in the past. ENR construction cost index for September, 2000 = 6224.] According to the 201 Facilities Plan Update the four major interceptors of the Town with some small exception, have the capacity to meet the projected 20-year design flow of the upgraded system. Therefore they have capacities to serve additional new development. The Bay Road and Creighton Road pumping stations will service most of the newly developing areas in Town; the Creighton Road station is currently undergoing a major capacity upgrade to handle future flows to the treatment plant.

Future Facility Capacity Improvements

The 201 Facilities Plan Update outlines a comprehensive series of improvements through the twenty-year period 2000-2020 and includes capital investments in the wastewater treatment and collection system totaling over \$15 million dollars. Certain portions of these improvements will add capacity to the treatment system, while others represent extensions that expand the service area of the system. A significant portion of total capital costs estimated in the 201 Facility Plan Update are likely to paid for at the time new development takes place, subject to the rules governing extensions serving new development. Therefore, non-impact fee funds are presumed to support these extensions. According to the Newmarket Capital Improvements Program, a

Tax Increment Financing (TIF) district will fund the extension of the B&M interceptor to serve new industrial development (Black Bear Business Park). The incremental taxable value of the properties in the district will reimburse the Town for the capital investment in interceptor construction and other development expenses. This and other recommended improvements for future interceptors, collection lines and pump stations are not included in the impact fee basis, as these costs have traditionally been paid for at the time of development by exactions related to the specific impacts of new developments as they occur. A new business locating in the Black Bear Business Park TIF, however, would be subject to impact fees unless otherwise waived. The impact fee assessment would be applicable here, since it is not based on the cost of the interceptor extension, which will be funded by the TIF. The impact fee, in contrast, pays for the development's proportional consumption of wastewater treatment capacity.

Future improvements included in the impact fee charge include the wastewater treatment plant upgrade of the secondary treatment process and sludge handling as well as the Creighton Street pumping station improvements now underway. The impact fee basis does not include the Packers Falls and Cedar Street pump station capacities and related upgrades. These stations serve sewer basins that have little capacity for new or infill development. In addition, the proposed expansions of capacity at these pump stations is related principally to the need to accommodate backwash discharge when the water treatment plant is brought on-line. These improvements would appear to be needed with or without the demands of new growth on the sewage treatment system.

A number of system improvements and upgrades are proposed in the 201 Facilities Plan Update that constitute corrections to "problem areas". These expenditures will remedy existing deficient conditions. Such expenditures cannot be paid for with impact fees, and are therefore not included in the basis for impact fee assessment. A major outfall upgrade is needed to meet conditions of the Town's permit for discharge to the Lamprey River. Based on the description of project needs in the 201 Facilities Plan Update, it is assumed that this project is necessitated primarily by existing environmental quality deficiencies. While the new outfall will be sized to meet year 2020 projected discharge levels, and will in part serve new growth, its costs have not been included within the impact fee assessment.

All of the anticipated improvements related to the B&M interceptor extension have been proposed to be paid for under a tax increment financing district agreement, and given that these improvements would service only a certain area of development in town, the cost of these improvements was not included in the impact fee basis.

In the calculation of impact fees, the funds received or anticipated from State or Federal sources have been deducted from the total capital value (estimated replacement cost) to estimate the net local cost burden of placed on the Town and/or the ratepayer. When primary and secondary treatment facilities were constructed, significant federal aid was available to sewer system projects. Therefore a relatively small portion of past capital cost is recoverable as impact fees. Presently the cost of most upgrade and improvement items related to the sanitary sewer and wastewater treatment system are eligible for 20% State grants, and can be financed for 20 years under the State Revolving Loan Fund. The grant program began in 1993, and was used for the funding of the sludge dewatering facility.

Part III. Wastewater Treatment Impact Fee

Table III-3 details the initial calculation of the impact fee for wastewater treatment capacity. The included elements represent just under \$ 7 million dollars in capital value for the core elements of existing and planned treatment and disposal capacity.

Table III-3 – Capital Value of Core Wastewater Treatment Facilities

NEWMARKET SANITARY SEWER, WASTEWATER TREATMENT & DISPOSAL SYSTEM							
Facility Capacity/Size	Service or Benefit Area	Year Completed	Total Capital Cost	Estimated Replacement Cost (2000)	Less % State and/or Federal Funds Applied	Recoverable as Impact Fee - Value of Local Govt. Capital Investment	
EXISTING FACILITIES							
Wastewater Treatment Plant							
.85 MGD (design)							
Primary Plant Construction	System	1969	\$1,500,000	\$7,356,974	80%	\$1,471,395	
Secondary Treatment Upgrade & Four Major Interceptors	System	1985	\$3,200,000	\$4,747,747	95%	\$237,387	
Sludge Dewatering Facility	System	1993	\$644,000	\$847,053	20%	\$677,642	
Subtotal				\$12,951,774		\$2,386,424	
Pumping Stations							
				Source: Town Insur. Sched. Replacement Cost			
Bay Road	500 GPM	Basin 4-5	1969, 1983	\$30,000		\$30,000	
Creighton St.	870 GPM; 1350 planned	System	1969	All basins \$500,000		\$500,000	
Subtotal				\$530,000		\$530,000	
Force Mains							
	(Newmarket CIP)			Source: CIP Replacement Cost			
Bay Road	640 lin. ft.	Basin 4-5	1969, 1983	\$ 70/ft.	\$44,800	\$44,800	
Under River	320 lin. ft.	Basin 4-5		\$200/ft.	\$64,000	\$64,000	
Creighton St.	400 lin. ft.	Basin 5	1969	\$ 70/ft.	\$28,000	\$28,000	
Subtotal				\$136,800		\$136,800	
Total Capital Value Existing Core Facilities				\$13,618,574		\$3,053,224	
Existing Conditions (2000):							
Treatment Capacity	.85 MGD						
Avg. Daily Flow:	.64 MGD						
Existing Demand:	75.3%						
Avail. To New Development	24.7%						
PLANNED FACILITIES REQUIRED FOR 2020 DESIGN YEAR CAPACITY							
SYSTEM-WIDE CAPACITY IMPROVEMENTS							
Capacity/Size	Service or Benefit Area	Year Constructed	Estimated Capital Cost (2000)	Less % State Funds Anticipated	Recoverable as Impact Fee - Local Govt. Capital Investment		
Wastewater Treatment Plant							
WWTP Upgrade (Portions of Cost Contributing to Capacity)	Upgrade to 1.265 MGD Capacity	Planned	\$3,200,000	20%	\$2,560,000		
Secondary Process Upgrade	System		\$600,000	20%	\$480,000		
Sludge Handling Imp.	System						
Major Interceptors & Pumping Stations							
Creighton St. Pumping Station Improvements	Upgrade to 1350 GPM	System	Under Construction (2000)	\$1,100,000	20%	\$880,000	
Total Treatment System Capacity Improvements				\$4,900,000		\$3,920,000	
TOTAL EXISTING AND PLANNED INVESTMENT IN CORE TREATMENT CAPACITY						\$6,973,224	
TREATMENT CAPACITY AFTER IMPROVEMENTS (MGD)							
COST PER GALLON PLANT CAPACITY							
				Gallons Per Day Capacity	1,265,000	Design Capacity	
				Capital Cost Per GPD Capacity	\$8.51	Less Allowances for Infiltration and Septage	
						\$7.19	

Capacity Cost and Credits Per Unit of Demand

The total gallon per day capacity of the future wastewater treatment system will be 1.265 MGD. After allowances for infiltration (system inefficiencies) and septage treatment, a generated flow of 970,000 gallons per day is projected for the year 2020 in the 201 Facilities Plan Update. User rates and fees are based on metered water usage. Therefore, users absorb the cost of system inefficiencies such as infiltration and inflow. (Total flow to the sewage treatment plant is higher than metered water usage.) Therefore the total attributable capital cost for impact fee assessment is calculated as:

$$\begin{aligned} \text{Recoverable Capital Value of Treatment Capacity: } & \$ 6,973,224 / 970,000 \text{ gpd demand} \\ = & \$ 7.19 \text{ per gpd demand on system capacity (measured by water usage)} \end{aligned}$$

In the practice of impact fee assessment, the fee payer, at the point of new construction, will pay a one-time impact fee toward that development's share of consumption of sewage treatment capacity as defined above. Once the development is in place and connected to the system, it is subject to user fees based on metered water consumption. Debt service on capital facilities of the sewer system in Newmarket has been typically paid from these user fees. Without the allocation of a credit against the capital impact fee charge for future payments for existing capacity, the development paying an impact fee could later be charged again for existing capacity costs that have been financed by bonded debt. Therefore it is recommended that a credit be assigned to account for a "double payment". Generally credits are awarded within an impact fee system based on outstanding remaining debt service to be paid in the future for capacity that serves existing development. Current outstanding bonded debt in the system includes several more years of remaining payments on a 1985 secondary treatment plant upgrade and the 1993 dewatering facility. The net local debt service payments (after state grants) in remaining payments are credited to the future fee payer at a net present value using discount rate of 6% (see Table III-4).

Table III-4 – Credits for Future Payments Toward Existing Capacity

CREDIT FOR NET LOCAL DEBT ON EXISTING CAPACITY DEVELOPMENT (1)			
	Discount Rate:	6.00%	
	Credit Calculation Period:	10 yrs	
Year	Local Share of Outstanding Debt Service Cost for Capacity Improvements	Assumed Gallons/Day Water Demand (2)	Debt Service Capital Cost Per Gallon/Day
2001	\$60,332	465,120	\$0.13
2002	\$57,175	474,422	\$0.12
2003	\$53,730	483,911	\$0.11
2004	\$38,293	493,589	\$0.08
2005	\$34,600	503,461	\$0.07
2006	\$34,600	513,530	\$0.07
2007	\$0	523,801	\$0.00
2008	\$0	534,277	\$0.00
2009	\$0	544,962	\$0.00
2010	\$0	555,861	\$0.00
NPV of Future Debt Payments @ 6% Discount Rate		Credit/GPD:	\$0.49
		\$233,494	

(1) Includes net local debt service for remaining debt on treatment plant, dewatering facility.
 (2) Assumes metered water use increases @ 2 %/yr from 2000 base of 456,000 GPD

Impact Fee Assessment Schedules

Based on the credit calculation in Table 4, the net local wastewater treatment facility capital cost is computed as: \$ 7.19 per average gallon per day projected water use, less credits of \$ 0.49/gallon/day = \$ 6.70/gallon/day impact fee, to be assessed to new development. A fee based on average gallons per day water consumption provides for a fee that can be applied to residential or non-residential development based on expected demands on the capacity of the system.

Residential Impact Fees

Recent system design analysis studies by the Town's engineering consultants have indicated a ratio of 57 gallons per day per capita as Newmarket's residential domestic water usage, providing a reasonable estimate of demand on sewage treatment capacity. Past studies have indicated similar levels of per capita water use in Newmarket, with some differences in water use by type of structure. A 1987 study of water usage in Newmarket by Underwood Engineering indicated a range in expected usage by type of dwelling unit. When these use rates are compared to 1990 data on persons per unit by type of unit in Newmarket, the implied usage ranges from a low of 49 gallons per capita per day in mobile homes to 64 gallons per capita per day in single family detached housing (see Table III-5).

TABLE III-5

Average Residential Water Usage by Type of Unit in Newmarket			
Type of Structure	Average Usage in Gallons Per Day (1)	Actual	
		Newmarket Persons/Unit- 1990 Census	Implied Usage Per Capita Per Day
Single Family	182.54	2.86	64
Condo (Townhouse)	151.86	2.60	58
Duplex	135.41	2.54	53
Apartment (3+ Units)	118.20	2.07	57
Mobile Home	107.73	2.19	49

(1) 1987, Underwood Engineers, Inc. *Water System Network Study*

Because actual data on metered residential usage in Newmarket was available as reflected in Table III-5, it has been utilized as the basis for computing proportional wastewater disposal impact fee assessments for residential uses. Table III-6 below provides for a proportional impact fee assessment that reflects the average residential water usage per occupied unit in Newmarket by type of structure.

TABLE III-6

RESIDENTIAL IMPACT FEE FOR SEWAGE TREATMENT CAPACITY		
Growth-Related System Cost Per GPD Capacity:		\$7.19
Less Credit/Gal/Day		(\$0.49)
Impact Fee/GPD Demand		\$6.70
Type Of Structure	Average GPD Water Usage Per Dwelling Unit	Impact Fee Per Dwelling Unit
Single Detached	183	\$1,226
Single Attached (Townhouse)	152	\$1,019
Duplex/Two-Unit Apt.	135	\$905
3-4 Unit Apartment Structure	118	\$791
5+ Unit Apartment Structure	118	\$791
Manufactured Home	108	\$724

As shown in Table III-6, the schedule of residential fees varies size by type of unit to maintain proportionality in the impact fee assessment based on expected water usage. Under this schedule, a single family detached housing unit would pay an impact fee of \$1,226. This fee would be assessed in addition to any other authorized capital charges such as fees allocated to a sinking fund for the repair or replacement of sewer lines.

Non-Residential Impact Fees

While some guideline factors exist, there is no ready-made, gallon per day use factor that can be attributed to all types of commercial and industrial development on a per square foot or per employee basis. Estimated impact fees using generic assumptions about employees per square foot and related consumption are illustrated in Table III-7.

The impact fee assessment for non-residential uses is established in this methodology as \$6.70 dollars per gpd based on average daily water consumption projected for that use. Usage and related fees may vary considerably according to the type of development, and the extent to which process, cooling or wash water is used in the specific industry or business. For example, a small laundramat or car wash may consume far more system capacity than a very large retail user. The impact fee assessment for non-residential uses should retain enough flexibility for case-by-case review of the likely demand on the system using expected water usage rates. Uses that require significant amounts of process water will need to be reviewed based on their actual operational needs. In any case, the impact fee assessment rate would remain fixed at the established rate at \$6.70 dollars per average gallons per day projected water usage.

TABLE III-7 – Illustration of Non-Residential Impact Fees [Generic Examples Only]

COMMERCIAL/INDUSTRIAL IMPACT FEE FOR SEWAGE TREATMENT CAPACITY						
Growth-Related System Cost Per						
GPD Capacity: \$7.19						
Loss Credit/Gal/Day (\$0.49)						
Impact Fee/GPD Demand \$6.70						
Actual impact fee assessments for non-residential uses to be determined based on estimates of average daily water usage attributable to the use x the impact fee amount per GPD.						
EXAMPLES below illustrate how fees may be calculated on a square foot basis:						
B-1. COMMERCIAL/INDUSTRIAL EXAMPLES BASED ON DIFFERENT UNIT MEASURES						
Examples:	Unit of Demand	Average Usage (Gallons per day per demand unit)*	Demand Units in Development	Impact Fee		
Office (except medical)	Employees	15	25	\$2,513		
Industrial/Manufacturing	Employees	20	50	\$6,702		
Retail (except restaurant)	Employees	10	35	\$2,346		
Restaurant	Number of Seats	40	40	\$10,723		
Motel	Guest	50	25	\$8,378		
B-2. COMMERCIAL/INDUSTRIAL EXAMPLES BASED ON SQUARE FOOTAGE						
Non-Residential Use Type	Square Foot Per Employee (Estimated)	Gallons Per Employee Per Day*	Impact Fee Per 1000 Sq. Ft.	Fee By Gross Floor Area (sq. ft.)		
				2,500	5,000	10,000
Office except medical	250	15	\$402	\$1,005	\$2,010	\$4,020
Retail except restaurant	500	10	\$134	\$335	\$670	\$1,340
Industrial/Manufacturing	450	20	\$298	\$745	\$1,490	\$2,980
Warehouse/Transportation	750	15	\$134	\$335	\$670	\$1,340
* Includes domestic sanitary usage only. Businesses and industries using process water should be calculated individually.						

To maintain flexibility in the assessment of wastewater disposal impact fees for non-residential development, the recommended procedure is as follows:

1. Upon receiving inquiries about impact fee assessment, or upon application for a building permit or utility connection permit, the Code Enforcement Officer notifies applicant of the need to determine average daily water usage for that development. Applicant submits a detailed description of the proposed use and an estimate of projected average daily water usage for review.
2. Prior to assessing the impact fee, Code Enforcement Officer requests a review of the applicant's estimate and use classification by the Department of Public Works.
3. The Department of Public Works reviews estimated usage based on a detailed description of proposed use and processes involved, compares to available standards and actual usage experience in Newmarket, and recommends to the Code Enforcement Officer the acceptance of applicant's estimate or the Department's recommendation for revision.

4. Code Enforcement informs applicant of impact fee assessment based on expected average gallon per day usage approved by the Department of Public Works, times the impact fee assessment rate of \$6.70 per gallon per day.
5. Applicant either accepts fee and pays same at or before Certificate of Occupancy, or applies to the Planning Board for a partial waiver of the amount assessed in compliance with the waiver provisions of the impact fee ordinance, supplying the basis for the calculations and related documentation.

In reviewing estimates of average daily water usage, the Department of Public Works and the Code Enforcement Officer may reference the expected usage tables in the Appendix to this methodology. The various usage factors in the Appendix contain a range of estimates for average gallons per day water usage. These tables reflect estimates that are primarily domestic usage; certain uses may also introduce special generators of additional demand on system capacity that are not reflected in these tables. Development involving high amounts of process water and wastewater discharge will need to be reviewed in more detail relative to their impact on the capacity of the wastewater treatment system. In addition to referring to the sources shown in the Appendix, the Department of Public Works may wish to utilize the services of its consulting engineer to estimate water usage for non-residential developments.

Research for this impact fee study included a review of water billing records for various types of commercial and industrial development within Newmarket to estimate typical water use in gallons per day. Using property tax assessment data to estimate the floor area of buildings housing these businesses, average daily usage was then converted to estimated usage as gallons per day per square foot. Even within similar classes of property, a considerable range in actual usage is indicated by this data. (See Table III-A-2 for results)

Related Issues

Other System Charges for New Connections.

Under current development policy of the Town, sewer connection or permit fees are currently charged to new users as they hook up to the sewer system. The related charges are currently \$1,000 per dwelling unit for residential use and \$1,000 for a non-residential connection. Permit fees for new connections have been utilized since around 1970 to create a fund that has been used primarily for replacement and upgrades of sewer lines and capital equipment of the system.

Sewer connection charges are authorized by Newmarket's Ordinance Governing the Discharge of Waters and Wastes into the Public Sewer Systems (adopted November 7, 1977). The ordinance provides for a sinking fund for the replacement of sewer lines, and allows sewer connection charges for this purpose. Given our understanding of the use of the connection fee revenues, the existing charge does not appear to function as an impact fee it is not related to capacity. At the same time, the rationale or cost basis used to establish the existing connection fee is unclear, and probably should be justified by a formula or series of assumptions that demonstrate a relationship between estimated replacement costs of sewer lines and their useful life, allocated across the projected user base.

Part III. Wastewater Treatment Impact Fee

The sinking fund account provides a base of revenues for replacements to be made as needed. The fund in turn reduces the expense that would otherwise be charged as part of the user fee. Provided that the permit or connection charge has been established properly, both the impact fee developed under this methodology, as well as the connection charge (dedicated to the sinking fund) could be applied in tandem. However, the Town should assure that any impact fee revenues are used to pay for capital costs or related debt service for capacity-related projects, while sinking fund revenues are allocated toward repair or replacement projects.

Capacity-Related Charges for New Connections to Existing Development

Under an impact fee system, charges are normally levied only at the point that new construction takes place, based on a building permit. In the future, some existing development may either request or be required to connect to the sewer system. With respect to the wastewater disposal system, new connections represent "new development" with proportional impacts on the capacity of the wastewater disposal system. If it is not possible to assess all new connections under an impact fee ordinance, then the Town may need to utilize the authority of the Sewer Ordinance to authorize the collection of similar capacity-related fees at the time existing development connects to the system. The impact on capacity will occur whether the development seeking a permit for connection is a new or existing use.

Growth Management

Based on the draft 201 Facilities Update, a significant portion of new housing development appears to be taking place beyond the sewer system service area. As impact fees are imposed within the water or sewer service areas, they represent a reasonable, but additional cost that can be avoided by developing new homes in the outlying parts of town. The Town should consider growth management and land use policies that encourage new development to locate within the utility service areas.

References on Newmarket Wastewater Treatment Capacity

June 13, 2000; Steven Snell (NH Dept. of Environmental Protection, Water Supply and Pollution Control Division); telephone interview – provided historical cost data and state/federal funding assistance records for primary plant construction, secondary upgrade, and sludge dewatering facility.

January 14, 2000; Underwood Engineers, Inc. 201 Facilities Plan Update, Newmarket, New Hampshire, SRF Project No. CS-330162-05.

1998; Underwood Engineers, Inc. Water Supply Study/Wastewater – (Wastewater Treatment Plant Evaluation).

1989; Underwood Engineers, Inc.; Sewer Capacity Study

**APPENDIX TO WASTEWATER TREATMENT
IMPACT FEE METHODOLOGY:**

**REFERENCE STANDARDS FOR
NON-RESIDENTIAL WATER USAGE RATES**

Table III -A-1
Estimated Average Daily Domestic Water Use For
Non-Residential Development

AVERAGE ESTIMATED NON-RESIDENTIAL WATER USE		
	UNIT MEASURE	Average Use Gal/Unit/Day
COMMERCIAL		
Airport	Passenger	3
Auto Service Station	Employee	13
	Vehicle served	10
Boarding House	Person	40
Department Store	Toilet room	550
	Employee	10
Hotel	Guest	50
	Employee	10
Lodging House/Tourist Home	Guest	40
Motel	Guest	35
Motel w/kitchen	Guest	40
Laundry (self-service)	Machine	550
	Wash	50
Office	Employee	15
Public Lavatory	User	5
Restaurant (including toilet)		
Conventional	Customer	9
Short-Order	Customer	6
Bar & Lounge	Customer	3
	Seat	20
Shopping Center	Parking space	2
	Employee	10
Theater		
Indoor	Seat	3
Outdoor	Car	4
INSTITUTIONAL		
Assembly hall	Seat	3
Hospital, medical	Bed	150
	Employee	10
Hospital, mental	Bed	120
	Employee	10
Prison	Inmate	120
	Employee	90
Rest Home	Resident	90
	Employee	10
School, Day		
w/cafeteria/gym/showers	Student	25
w/cafeteria only	Student	15
No cafeteria or gym	Student	10
School, boarding	Student	75
RECREATIONAL		
Apartment, resort	Person	60
Bowling alley	Alley	200
Camp		
Pioneer type	Person	25
Children's central toilet/bath	Person	45
Day, with meals	Person	15
Day, w/o meals	Person	13
Luxury, private bath	Person	350
Trailer	Trailer	125
Campground, developed	Person	30
Country club	Member present	100
	Employee	50
Dormitory	Person	35
Fairground	Visitor	3
Picnic park, w/flush toilets	Visitor	8
Swimming pool and beach	Customer	10
	Employee	10
Visitor Center	Visitor	6

Source: Excerpts from Metcalf & Eddy, Wastewater Engineering: Treatment-Disposal-Reuse, Third Edition (1991)

Table III-A-2
Non-Residential Water Consumption by Existing Uses in Newmarket
Gallons per Day Usage/Usage Per 1000 Sq. Feet

NEWMARKET COMMERCIAL/INDUSTRIAL METERED WATER USE PER 1000 SQUARE FEET OF GROSS FLOOR AREA (Data Based on a Sample)					
Gallons Per Day Per 1000 Sq. Ft.					
Type of Use	Average	Low	High	No of Bldgs	
Laundramat	1,885	1,846	1,912	2	(Est. Avg. 200 gpd per machine)
Restaurant-Fast Food	377	---	---	1	
Restaurant-Gen.	121	86	221	6	(some include food sales; 1 includes apartments.)
Gasoline Sales/Service	95	58	187	4	
Services - Hair Salon	63	---	---	1	
Industrial (All)	41	9	66	7	(Industrial park not currently served by public sewer)
Industrial Park Only	21	9	38	5	
Social Clubs	32	17	68	3	(5 businesses in 3 bldgs)
Athletic Center	31	---	---	1	
Retail (excluding gasoline sales, restaurants)	19	5	37	3	
Warehouse/Storage	9	---	---	1	
All Uses in Sample	62	5	1,912	29	
Excluding Laundramats	47	5	377	27	

Source: BCM Planning, June 2000 - calculations based on compilation of Newmarket metered water usage and property assessment data for 29 non-residential land uses.

Table III-A-3

PUBLIC WATER SUPPLIES: AVERAGE DAILY USAGE DESIGN DEMAND BY LAND USE		
Non-Residential		
Campground-Sewered	90	Per Site
Campground-Central Comfort Station	75	Per Site
Motel	50	Person
School with Gym/Cafeteria	25	Student
Factory (Sanitary Only)	20	Worker
Restaurant	40	Per Seat
Lounge	20	Per Seat
Office Space	15	Per Person or per 100 sq. ft.

Source: Design Standards for Small Public Drinking Water Systems, June 1997, State of New Hampshire, Dept. of Environmental Services, Bureau of Water Supply and Pollution Control. N. H. Code of Administrative Rules, Part Env-Ws 372.

PART IV:

**IMPACT FEES FOR
WATER SUPPLY
AND TREATMENT**

Town of Newmarket

**PART IV: IMPACT FEES FOR WATER SUPPLY AND TREATMENT
Town of Newmarket, New Hampshire**

Authority

New Hampshire RSA 674:21,V authorizes municipalities to assess impact fees to new development for water treatment and distribution facilities. The amount of such a fee must be a proportional share of the municipal capital improvement cost reasonably related to the capital need created by new development. In addition, the statute authorizes the recouPMENT of costs for capital improvements made in anticipation of the demands of new development.

Existing Facilities

List of Facilities

The Newmarket water supply, storage, treatment and distribution system consists of a number of major capital facilities:

- Bennett well (230 gpm, operating 14-16 hrs/day)
- Sewall well (260 gpm; operating 14-16 hrs/day)
- Water treatment plant (650 gpm) drawing on surface water supply
(Plant not operating, but scheduled to go on line in 2000)
- Water storage tank (750,000 gallons)
- Water mains, distribution lines and hydrants

Capital Costs

Several major capital expenditures for the water system contemplated in the Newmarket Capital Improvements Program. Projects cited in the CIP include:

- Development of additional groundwater source wells at a capital expense of \$500,000 to \$1,000,000.
- Construction of an additional water storage tank on the Durham side of the Lamprey River at a cost of \$500,000 to \$1,000,000.
- A water line replacement program. The CIP estimates the total replacement cost of all lines in the system is about \$7.3 million, and recommends that \$97,417 per year be placed in the capital reserve each year for a replacement program. The 1999 CIP reported a capital

Part IV. Water Supply and Treatment Impact Fees

reserve account of over \$383,000. Reserves for replacement are derived from the water rate and from water permit (connection) fees.

- In addition to these expenditures, the CIP shows remaining debt service on the water treatment plant upgrade that was constructed in 1989 at a cost of \$2.3 million. Bond payments will continue until 2009 under a 20-year bond. The State of NH reimburses the Town for 20% of the principal and interest payments on the bond; the balance is funded by users through the water rate.

Under local regulations governing connections to the public water system, developers or property owners are responsible for the capital costs of extending water service to the development site.

In addition, a water permit fee is collected for each new connection at the rate of \$1,000 per domestic dwelling unit (meter supplied by Department) and \$400 per inch of the size of the desired service line (meter at expense of new user). Funds collected from the issuance of water permit fees are allocated to the capital reserve account for use in water line replacement programs. Because the water permit fees serve a different function (line replacement) than the impact fee assessment, it is assumed that both the water permit fees as well as the impact fee may be assessed on new or upgraded connections to the public water system.

Facilities Eligible for Impact Fee Assessment

Impact fee assessment should be limited to the recoupment of capital investment from existing facilities that have remaining capacity to accommodate new development, and/or to future facilities that will provide such capacity. Where a proposed improvement is limited to serving existing needs or replacing existing facilities, that cost should not be assessed as an impact fee. The history and current status of capital facilities relating to water supply, treatment and distribution indicates that a water impact fee in Newmarket should center on the recoupment of local capital investment in the water treatment plant. A review of water supply and treatment facilities in Newmarket indicates that:

- The Town has been relying on its two existing wells for a groundwater supply that has required little or no treatment, representing a comparatively low cost method of delivering water to users compared to treatment plant operation. However, recent findings have indicated a need to reduce pumping of these wells by 50% to avoid depleting groundwater resources in the Town. At recommended pumping limits of 8-9 hours/day, the wells cannot provide an adequate supply of water for either existing or future needs.

Part IV. Water Supply and Treatment Impact Fees

- The water treatment plant has substantial available capacity to serve future water supply needs to accommodate new development in the Town.
- Although new wells may be explored as future water supply sources, the Town will rely on the treatment plant as an essential part of the community water supply both for existing users and for new development.
- The additional water storage tank that is called for by the CIP has been a recommended water system improvement for many years, and is needed to balance pressure and provide for better fire flow in the existing system. According to a 1987 engineering report, the Town should have 2 million gallons of storage vs. its 750,000 gallons of storage capacity. No engineering reports were available that indicate the degree to which these storage needs represent current system deficiencies vs. storage requirements to absorb growth. It appears that, if constructed, an additional storage tank would resolve a long-standing capital need relating primarily to existing deficiencies rather than to the demands of growth.
- New water line extensions are already the responsibility of the developer or land owner(s) affected. The cost of replacing existing water lines, as budgeted in the CIP, is not a growth-related expense that should be part of an impact fee assessment.

Water Supply and Treatment Facility Capacity

According to the Newmarket Master Plan (Draft, 2000), the water treatment plant has a total daily production capacity of 885,600 gallons if pumps are operated twenty-four hours a day. Actual daily output is estimated at 705,000 gallons per day due to the need for treated water used in backwash cycles. The plant was retrofitted in 1989 in a major capacity upgrade in order to meet an anticipated high rate of growth from 1988-2008.

The Newmarket Water Treatment Plant upgrade in 1989 was designed based on growth assumptions made in a 1988 design study. The basic growth assumptions made at the time relied upon a population projection indicating the town could reach a population of over 14,000 by the year 2008. While not all of this population would be served by the water system, the projections assumed that the same proportion of the future population would be connected to the water system as in the base year 1988. Neither the projected population levels of growth nor the demand on the system increased at the projected rate (an average compound rate of nearly 4% per year). However, the design assumptions did result in the creation of substantial capacity at the plant that can accommodate Newmarket's projected new development for many years to come.

At the time the treatment plant was designed (1988), production capacity needs were projected at about 1 million gallons per day (mgd) by the year 2008. The expected population growth and development trends did not materialize. As of 1999, total water production in Newmarket remained under 0.5 mgd. Even if all supply were to be derived entirely from the treatment plant,

total current water usage is only about 53% of the maximum plant capacity of 885,600 gpd. This leaves substantial available plant capacity to accommodate new users. In the past, annual usage has grown more slowly than expected. Therefore, the Town has been able to rely on its groundwater sources, which are less expensive to operate than the treatment plant. Thus far, the Town has had virtually no operating experience with the water treatment plant since the installation of a major upgrade over 10 years ago.

The Town has been relying exclusively on two wells for its water supply needs. A recent analysis of the Newmarket Plains Aquifer (December 1999, Dufresne-Henry, Inc.), projected that, at current pumping rates, the Sewall Well will be inoperable in 2013 and the Bennett Well by 2017. Groundwater is being withdrawn at a rate that exceeds recharge, requiring the use of alternative supplies. The report recommended pumping the wells at no more than 8-9 hours per day vs. the typical 14-16 hours per day of current operation.

According to the Newmarket Master Plan (Draft, 2000), if the two wells are operated as recommended, the maximum production capacity for the treatment plant and the two wells totals 0.95 mgd. According to the Town Master Plan, average daily water usage in Newmarket is about 0.5 mgd, with peak usage in the summer of about 0.7 mgd. When the water treatment plant is operated, the combined capacity of existing water supply and treatment facilities in Newmarket should be able to handle anticipated average daily and peak usage for the next 20 years given anticipated growth rates.

Over the long term, actual average daily water usage has increased at an average compound rate of 2% per year between 1975 and 1999. That is about half the rate of growth anticipated by the design study for the treatment plant in 1988. For the future, the Newmarket Master Plan (Draft, 2000) projects an additional 1,400 new homes to be built between 2000 and 2020. If 85% of the homes are connected to the municipal water system (the estimated 1990 proportion), average daily water demand is projected by the draft Master Plan to reach 0.71 mgd in 20 years. Therefore, current supply facilities are capable of supplying projected average daily usage. The draft Master Plan anticipates peak daily use at 0.9 to 1.0 mgd, which approaches the limits of existing supply capacity.

As noted in the Master Plan, only between five to ten percent of average daily water use is estimated to come from commercial and industrial users. However, the Town's economic development plans call for a substantial increase in commercial and industrial uses within a major business park. As this growth occurs, both commercial and industrial users may become more significant source of demand on the system. This will depend on the types of businesses that are accommodated, and the extent to which water demand from these users is based on domestic versus process water consumption.

A recent estimate of the full build-out population of the Town (201 Facilities Plan Update, Underwood Engineers, Inc.) indicates that Newmarket could reach an ultimate population of 14,200 people in total at some future year. Long-term population projections developed by the New Hampshire Office of State Planning suggests that total population could grow to about 11,500 persons by the year 2020. The projected rate of population growth in the Town has been considerably lower than the pace that was originally assumed at the time of the treatment plant

upgrade. The Town has made substantial investments in the water treatment plant in anticipation of growth, and has water supply capacity to accommodate future growth and development. A portion of the Town's investment in water supply and treatment may be recouped in the form of impact fees.

Impact Fee Calculation

The water treatment plant represents a significant capital investment and the major upgrade of the plant in 1989 was designed specifically to increase its capacity to accommodate a significant amount of anticipated growth and development in the Town. Therefore recoupment of the investment in the water treatment plant is the focus of the impact fee calculations in the following section.

Water Treatment Plant Capital Value and Development Costs (See Table IV-1)

The 1988 study that was the basis for the water treatment plant upgrade (Water Supply Basis of Design, 1988, Dufresne-Henry, Inc.) compared the cost of a plant upgrade to a 1.0 mgd to the cost of a new 1.0 mgd water treatment plant. The lowest cost alternative for developing a new treatment plant was \$5.65 million based on estimates prepared in February 1988. Adjusted using the ENR (Engineering News Record) construction cost index from a base of February 1988 to September 2000, today's development cost for a new plant of comparable capacity could be as high as \$7.8 million.

According to the Town's water systems engineering consultant (Dufresne-Henry, Inc.), in consideration of some of the unique aspects of Newmarket's water treatment plant, a reasonable but conservative estimate of its replacement cost is in the range of \$4.5 to \$5.0 million. Because the plant has not been operated at any significant level since the 1989 upgrade, some additional capital investment in the treatment plant may be needed to make it fully functional. For the purpose of impact fee assessment, this methodology uses an estimated capital value of \$5.0 million for the water treatment plant.

The cost of the plant upgrade alone was \$2.3 million in 1989, which when adjusted to current costs represents a capital cost of just over \$3.1 in year 2000 dollars. A portion of the cost of the upgrade is supported by State funds, which pay 20% of the principal and interest cost on bonded debt for the facility upgrade. The present value of the State share of upgrade cost is estimated at \$620,000. The estimated replacement cost of the plant, less the State's share of the value of the plant upgrade, equals \$4.38 million. Using this estimated replacement cost allows for an impact fee calculation based on recoupment of the value of the net local investment to create plant capacity large enough of serving existing and projected future needs. It allows those paying impact fees to be assessed at a rate representing the current value of the system capacity that they will utilize.

Under an impact fee system, new development to be connected to the water system would pay a one-time capital impact fee, representing a proportionate share of the value of the capital facility capacity it consumes. Consumption of plant capacity is estimated based on the predicted average daily water usage of the new development. The common unit of demand applied to residential

Part IV. Water Supply and Treatment Impact Fees

and non-residential development is average gallons per day (gpd) demand. Maximum production capacity at the plant is 885,600 gallons per day (average daily use). The estimated present capital value of the local investment in the Newmarket water treatment plant is estimated as \$4.95 per gallon per day capacity. A debt service credit of \$0.92 per gallon per day is deducted from this capital cost.

Table IV-1

NEWMARKET WATER TREATMENT PLANT - RECOUPMENT IMPACT FEE				
	Gallon Per Day Capacity Based on Pumping Rates	Service or Benefit Area	Capital Cost	Estimated Current Replacement Cost
EXISTING FACILITIES				
Water Treatment Plant (Upgraded 1989)	885,600	System	Total Facility	\$4,000,000
	Operating at 24 hrs./day (2000 Master Plan)		1989 Cost	Yr. 2000 Adjusted
		Major upgrade 1989	\$2,300,000	\$3,100,000
		System		(\$620,000)
Present Value of Facility Investment - Less State Share of Upgrade Costs				\$4,380,000
Capital Facility Value Per gpd Capacity				\$4.95
Less Debt Service Credit/Gal/Day				(\$0.92)
Impact Fee/GPD Demand				\$4.03

Table IV-2 Impact Fee Credits

CREDIT CALCULATIONS - DEBT SERVICE ON WATER TREATMENT PLANT										
Term:	20 years									
Interest Rate	6.875%									
Discount Rate	6.000% For NPV Calculations									
Year	Balance	Principal	Interest	Total	Less State Share @ 20%	Net Cost to Users	Metered Water Use - Estimated Average Gal/Day (1)	Cost/Gallon for User-Supported Debt Service	Cost/Gallon To Support Existing User Demand @ 53%	
1990	\$2,300,000	\$0	\$158,125	\$158,125	(\$31,625)	\$126,500				
1991	\$2,185,000	\$115,000	\$150,219	\$265,219	(\$53,044)	\$212,175				
1992	\$2,070,000	\$115,000	\$142,313	\$257,313	(\$51,463)	\$205,850				
1993	\$1,955,000	\$115,000	\$134,406	\$249,406	(\$49,881)	\$199,525				
1994	\$1,840,000	\$115,000	\$126,500	\$241,500	(\$48,300)	\$193,200				
1995	\$1,725,000	\$115,000	\$118,594	\$233,594	(\$46,719)	\$186,875				
1996	\$1,610,000	\$115,000	\$110,688	\$225,688	(\$45,138)	\$180,550				
1997	\$1,495,000	\$115,000	\$102,781	\$217,781	(\$43,556)	\$174,225				
1998	\$1,380,000	\$115,000	\$94,875	\$209,875	(\$41,975)	\$167,900				
1999	\$1,265,000	\$115,000	\$86,969	\$201,969	(\$40,394)	\$161,575				
2000	\$1,150,000	\$115,000	\$79,063	\$194,063	(\$38,813)	\$155,250				
Future Payments										
2001	\$1,035,000	\$115,000	\$71,156	\$186,156	(\$37,231)	\$148,925	\$80,420	\$0.32	\$0.17	
2002	\$920,000	\$115,000	\$63,250	\$178,250	(\$35,650)	\$142,600	\$77,004	\$0.30	\$0.16	
2003	\$805,000	\$115,000	\$55,344	\$170,344	(\$34,069)	\$136,275	\$73,589	\$0.28	\$0.15	
2004	\$690,000	\$115,000	\$47,438	\$162,438	(\$32,488)	\$129,950	\$70,173	\$0.26	\$0.14	
2005	\$575,000	\$115,000	\$39,531	\$154,531	(\$30,906)	\$123,625	\$66,758	\$0.25	\$0.13	
2006	\$460,000	\$115,000	\$31,625	\$146,625	(\$29,325)	\$117,300	\$63,342	\$0.23	\$0.12	
2007	\$345,000	\$115,000	\$23,719	\$138,719	(\$27,744)	\$110,975	\$59,927	\$0.21	\$0.11	
2008	\$230,000	\$115,000	\$15,813	\$130,813	(\$26,163)	\$104,650	\$56,511	\$0.20	\$0.10	
2009	\$115,000	\$115,000	\$7,906	\$122,906	(\$24,581)	\$98,325	\$53,096	\$0.18	\$0.10	
Total 1990-2009		\$2,185,000	\$1,660,313	\$3,845,313	(\$769,063)	\$3,076,250	\$600,818			
NPV of Future Payments Only (2001-2009)							\$1,071,867	(\$214,373)	\$857,494	\$463,047
							Present value @ 6% discount rate		\$0.92	
								Debt Service Credit per gpd		

(1) Assumes annual metered use increase of 2% from base year 1999-2000 at 455,000 GPD

Impact Fee Credits

It is recognized that those who will be assessed an impact fee will also bear a portion of the remaining debt service payments on the 1989 bond for the treatment plant upgrade. Net debt service costs are passed on to users in the water rate. Existing development that is connected to the public water system has been paying for debt service costs on the plant upgrade for about 10 years. Existing levels of metered water use in Newmarket represent about 53% of total plant capacity. In Table IV-2, the present value credit is predicated on the need to provide a credit for that portion of remaining debt that is related to the provision of capital facilities serving existing development. The local share of annual debt service payments, divided by estimated gallons per day metered usage, indicates the cost per gallon per day that is related to debt service costs. The net present value of cost of user debt service costs is then calculated assuming a discount rate of 6% for the remaining term of the bond for the upgrade.

It is assumed that impact fees will be collected in future years that will be at least sufficient to reimburse the Town for the capital cost of treatment plant capacity that is consumed by demand from new connections. It is further assumed that metered usage (the user base) will increase at a compound rate of 2% per year, the long-term historical average in Newmarket.

Using this method, the net present value of 53% of future debt service payments by users is estimated as a present value of \$0.92 per gallon per day capacity. This credit amount has been deducted from the total treatment plant capital value per gpd to assure that the payer of an impact fee is not charged both for total capital value, and then again for the cost of financing capacity that is consumed by existing users.

After application of the credit, the resulting net impact fee is an assessment of \$4.03 per gallon per day average daily usage. This provides a "common denominator" of demand that can be assigned to various types of new development to assure that the impact fee is assessed on a proportionate share basis.

Impact Fees for Residential Development

Detailed water consumption rates were estimated in a 1987 water system engineering in Newmarket (see Table IV-3). When the average household size (1990 Census) for these units is applied to the usage estimates per dwelling unit, apparent rates of use for various types of dwelling units range from 49 - 63 gallons per capita per day. These data are consistent with recent utility studies that have used an overall average of 57 gallons per capita per day for general planning purposes to project residential water and sewage treatment demands. Table IV-3 illustrates expected water usage by type of structure for residential development in Newmarket. Table IV-3 utilizes these average water use estimates to generate standardized impact fees for residential development at the rate of \$4.03 per gpd average daily water use. Under this assessment schedule, a single family detached home to be connected to the public water system would pay \$737 as an impact fee. Other connection charges may also apply.

TABLE IV-3

Average Residential Water Usage by Type of Unit in Newmarket			
Type of Structure	Average Usage in Gallons Per Day (1)	Actual	
		Newmarket Persons/Unit- 1990 Census	Implied Usage Per Capita Per Day
Single Family	182.54	2.86	64
Condo (Townhouse)	151.86	2.60	58
Duplex	135.41	2.54	53
Apartment (3+ Units)	118.20	2.07	57
Mobile Home	107.73	2.19	49

(1) 1987, Underwood Engineers, Inc. Water System Network Study

TABLE IV-4

RESIDENTIAL IMPACT FEE BY TYPE OF STRUCTURE WATER SUPPLY AND TREATMENT CAPACITY		
Capital Value Per GPD Capacity:		\$4.95
Less Debt Service Credit/Gal/Day		(\$0.92)
Impact Fee/GPD Demand		\$4.03
Type Of Unit	Average GPD Water Usage Per Dwelling Unit	Impact Fee Per Dwelling Unit
Single Detached	183	\$737
Single Attached (Townhouse)	152	\$612
Duplex/Two-Unit Apt.	135	\$544
3-4 Unit Apartment Structure	118	\$475
5+ Unit Apartment Structure	118	\$475
Manufactured Home	108	\$435

Impact Fees for Non-Residential Development

Average gallon per day consumption of public water by non-residential uses is subject to significant variation by type of use and the scale of the development. In a 1983 report by Dufresne-Henry, Inc. entitled Water Supply Evaluation Study for the Town of Newmarket, average daily water use for non-residential development was estimated at an average of 25 gallons per capita per day applied to the number of employees (for businesses) and the number of students (the high school). Total commercial industrial demand in 1983 was estimated at less than 10% of total metered usage in Newmarket, and the proportion of current water demand generated by non-residential uses probably remains at or below 10% based on more recent studies. In the 1983 report, the range of average expected demand from non-residential users was between 15 and 35 gpd per employee.

Part IV. Water Supply and Treatment Impact Fees

Table IV-5 illustrates the allocation of impact fees to non-residential uses based on an assumption about the relation of number of employees to square footage of different types of non-residential developments. These represent very general use categories that over the long-term may produce proportionate impact fees on a gallon per day per employee basis. However, these usage rates will not reflect the differences within a general use category, such as the consumption differences between fast food versus other restaurants, warehouse uses versus manufacturing process uses, and other differences by industrial classification.

**Table IV-5 –Non-Residential Impact Fees
for Water Supply and Treatment (Generic Examples Only)**

NON-RESIDENTIAL IMPACT FEE FOR WATER SUPPLY AND TREATMENT CAPACITY						
System Cost Per GPD Capacity:	\$4.95					
Less Credit/Gal/Day	(\$0.92)					
Impact Fee/GPD Demand	\$4.03					
Actual impact fee assessments for non-residential uses to be determined based on estimates of average daily water usage attributable to the use x the impact fee amount per GPD.						
EXAMPLES below illustrate how fees may be calculated on a square foot basis:						
COMMERCIAL/INDUSTRIAL EXAMPLES BASED ON DIFFERENT UNIT MEASURES						
Examples:	Unit of Demand	Average Usage (Gallons per day per demand unit)*	Demand Units in Development	Impact Fee		
Office	Employees	15	25	\$1,511		
Industrial	Employees	20	50	\$4,029		
Retail (except restaurant)	Employees	10	35	\$1,410		
Restaurant	Number of Seats	40	40	\$6,447		
Motel	Guest	50	25	\$5,036		
COMMERCIAL/INDUSTRIAL EXAMPLES BASED ON SQUARE FOOTAGE					Fee By Gross Floor Area (sq. ft.)	
Non-Residential Use Type	Square Feet Per Employee (Estimated)	Gallons Per Employee Per Day*	Impact Fee Per 1000 Sq. Ft.	2,500	5,000	10,000
Office	250	15	\$0.24	\$604	\$1,209	\$2,417
Retail except restaurant	500	10	\$0.08	\$201	\$403	\$806
Industrial	450	20	\$0.18	\$448	\$895	\$1,791
Warehouse/Transportation	750	15	\$0.08	\$201	\$403	\$806
* Includes domestic usage only. Businesses and industries using process water should be calculated individually.						

The Appendix contains estimated water use for various types of non-residential development. While useful for long-term system planning, many typical measures of non-residential water use rely on changeable units such as number of seats, number of occupants, or number of employees in a particular development. As a basis for impact fee assessment, use of these variables for computation can be difficult to administer at the building permit stage, as the administrator has relatively little guidance as to the long-term reliability of estimates of demand that are based on variables such as the number of seats in a restaurant or the initial number of employees in a business.

The impact fee assessment for non-residential uses is established in this methodology as \$4.03 dollars per gpd based on average daily water consumption projected for that use. Usage and related fees may vary considerably according to the type of development, and the extent to which process or wash water is used in the specific industry or business. For example, a small laundramat or car wash may consume far more system capacity than a very large retail user. The

impact fee assessment for non-residential uses should retain enough flexibility for case-by-case review of the likely demand on the system using expected water usage rates. Uses that require significant amounts of process water will need to be reviewed based on their actual operational needs. In any case, the impact fee assessment rate would remain fixed at the established rate at \$4.03 dollars per average gallons per day projected water usage.

To maintain flexibility in the assessment of water supply and treatment impact fees for non-residential development, the recommended procedure is as follows:

1. Upon receiving inquiries about impact fee assessment, or upon application for a building permit or utility connection permit, the Code Enforcement Officer notifies applicant of the need to determine average daily water usage for that development. Applicant submits a detailed description of the proposed use and an estimate of projected average daily water usage for review.
2. Prior to assessing the impact fee, Code Enforcement Officer requests a review of the applicant's estimate and use classification by the Department of Public Works.
3. The Department of Public Works reviews estimated usage based on a detailed description of proposed use and processes involved, compares to available standards and actual usage experience in Newmarket, and recommends to the Code Enforcement Officer the acceptance of applicant's estimate or the Department's recommendation for revision.
4. Code Enforcement informs applicant of impact fee assessment based on expected average gallon per day usage approved by the Department of Public Works, times the impact fee assessment rate of \$4.03 per gallon per day.
5. Applicant either accepts fee and pays same at or before Certificate of Occupancy, or applies to the Planning Board for a partial waiver of the amount assessed in compliance with the waiver provisions of the impact fee ordinance, supplying the basis for the calculations and related documentation.

In reviewing estimates of average daily water usage, the Department of Public Works and the Code Enforcement Officer may reference the expected usage tables in the Appendix to this methodology. The various usage factors in the Appendix contain a range of estimates for average gallons per day water usage. These tables reflect estimates that are primarily domestic usage; certain uses may also introduce special generators of additional demand on system capacity that are not reflected in these tables. Development involving high amounts of process water and wastewater discharge will need to be reviewed in more detail relative to their impact on the capacity of the wastewater treatment system. In addition to referring to the sources shown in the Appendix, the Department of Public Works may wish to utilize the services of its consulting engineer to estimate water usage for non-residential developments.

The Appendix contains the a summary table of results of further research that was conducted for this study, which involved the compilation of actual metered water consumption records for

If it is not possible to assess impact fees on all new connections (including existing development that connects to the system in the future), then such fees should be enabled under a water utility ordinance, or other appropriate control, by referencing the impact fee methodology of this report. In this manner, all new connections or changes in use that introduce increased demand on the system can be treated equitably with respect to their proportionate demand on system capacity.

References on Newmarket Water Supply and Treatment Capacity

December 1999; Dufresne-Henry, Inc. Delineation of Wellhead Protection Area – Newmarket Plains Aquifer.

1998; Underwood Engineers, Inc. Water Supply Study/Wastewater – (Wastewater Treatment Plant Evaluation).

May 25, 1993; Dufresne-Henry, Inc.; “Assessment of Water Needs” (Letter Report)

March 1988; Dufresne-Henry, Inc. Water Supply Basis of Design.

March 1987; Underwood Engineers, Inc.; Water System Network Study.

**APPENDIX TO WATER SUPPLY AND TREATMENT
IMPACT FEE METHODOLOGY:**

**REFERENCE STANDARDS FOR
NON-RESIDENTIAL WATER USAGE RATES**

Part IV. Water Supply and Treatment Impact Fees

TABLE IV-A-1

AVERAGE ESTIMATED NON-RESIDENTIAL WATER USE		
	UNIT MEASURE	Average Use Gal/Unit/Day
COMMERCIAL		
Airport	Passenger	3
Auto Service Station	Employee	13
	Vehicle served	10
Boarding House	Person	40
Department Store	Toilet room	550
	Employee	10
Hotel	Guest	50
	Employee	10
Lodging House/Tourist Home	Guest	40
Motel	Guest	35
Motel w/kitchen	Guest	40
Laundry (self-service)	Machine	550
	Wash	50
Office	Employee	15
Public Lavatory	User	5
Restaurant (including toilet)		
Conventional	Customer	9
Short-Order	Customer	6
Bar & Lounge	Customer	3
	Seat	20
Shopping Center	Parking space	2
	Employee	10
Theater		
Indoor	Seat	3
Outdoor	Car	4
INSTITUTIONAL		
Assembly hall	Seat	3
Hospital, medical	Bed	150
	Employee	10
Hospital, mental	Bed	120
	Employee	10
Prison	Inmate	120
	Employee	90
Rest Home	Resident	90
	Employee	10
School, Day		
w/cafeteria/gym/showers	Student	25
w/cafeteria only	Student	15
No cafeteria or gym	Student	10
School, boarding	Student	75
RECREATIONAL		
Apartment, resort	Person	60
Bowling alley	Alley	200
Camp		
Pioneer type	Person	25
Children's central toilet/bath	Person	45
Day, with meals	Person	15
Day, w/o meals	Person	13
Luxury, private bath	Person	350
Trailer	Trailer	125
Campground, developed	Person	30
Country club	Member present	100
	Employee	50
Dormitory	Person	35
Fairground	Visitor	3
Picnic park, w/flush toilets	Visitor	8
Swimming pool and beach	Customer	10
	Employee	10
Visitor Center	Visitor	6

Source: Excerpts from Metcalf & Eddy, *Wastewater Engineering: Treatment-Disposal-Reuse*, Third Edition (1991)

TABLE IV-A-2
Non-Residential Water Consumption by Existing Uses in Newmarket
Gallons per Day Usage/Usage Per 1000 Sq. Feet

NEWMARKET COMMERCIAL/INDUSTRIAL METERED WATER USE PER 1000 SQUARE FEET OF GROSS FLOOR AREA (Data Based on a Sample)					
Gallons Per Day Per 1000 Sq. Ft.					
Type of Use	Average	Low	High	No of Bldgs	
Laundramat	1,885	1,846	1,912	2	(Est. Avg. 200 gpd per machine)
Restaurant-Fast Food	377	---	---	1	
Restaurant-Gen.	121	86	221	6	(some include food sales; 1 includes apartments.)
Gasoline Sales/Service	95	58	187	4	
Services - Hair Salon	63	---	---	1	
Industrial (All)	41	9	66	7	(Industrial park not currently served by public sewer)
Industrial Park Only	21	9	38	5	
Social Clubs	32	17	68	3	
Athletic Center	31	---	---	1	
Retail (excluding gasoline sales, restaurants)	19	5	37	3	(5 businesses in 3 bldgs)
Warehouse/Storage	9	---	---	1	
All Uses in Sample	62	5	1,912	29	
Excluding Laundramats	47	5	377	27	

Source: BCM Planning, June 2000 - calculations based on compilation of Newmarket metered water usage and property assessment data for 29 non-residential land uses.

Table IV-A-3

**PUBLIC WATER SUPPLIES: AVERAGE DAILY USAGE
DESIGN DEMAND BY LAND USE**

Non-Residential

Campground-Sewered	90	Per Site
Campground-Central Comfort Station	75	Per Site
Motel	50	Person
School with Gym/Cafeteria	25	Student
Factory (Sanitary Only)	20	Worker
Restaurant	40	Per Seat
Lounge	20	Per Seat
Office Space	15	Per Person or per 100 sq. ft.

Source: Design Standards for Small Public Drinking Water Systems, June 1997, State of New Hampshire, Dept. of Environmental Services, Bureau of Water Supply and Pollution Control. N. H. Code of Administrative Rules, Part Env-Ws 372.

NEWMARKET IMPACT FEE ASSESSMENT

RESIDENTIAL IMPACT FEES PER RESIDENTIAL UNIT

Units in Structure	Public Schools	Recreation Facilities	Wastewater Treatment*	Water Supply & Treatment*	Maximum Residential Impact Fees
Single Family Detached	\$3,418	\$276	\$1,226	\$737	\$5,657
Single Family Att. or Townhouse	\$2,197	\$325	\$1,019	\$612	\$4,153
2 - Unit Structures	\$2,963	\$353	\$905	\$544	\$4,765
Multifamily 3-4 Units	\$1,489	\$323	\$791	\$475	\$3,077
Multifamily 5+ Units	\$743	\$279	\$791	\$475	\$2,287
Manufactured Housing	\$1,770	\$280	\$724	\$435	\$3,208

Notes on fee derivation and application to new development	Enrollment per unit x capital cost per pupil, less state building aid and property tax credits. Fee not applicable to housing for elderly.	Implementation will require significant investment of Town funds to rectify existing deficiencies. Fee schedule reflects credit for existing deficiencies.	(\$ 6.70 per gpd expected water usage - cost of central treatment facilities only). Assessed only on new or upgraded connections to public wastewater disposal system.	(\$ 4.03 per gpd expected water usage - cost of water treatment facilities only). Assessed only on new or upgraded connections to public water system.	Fees for each facility type must be segregated in separate accounts. Fees cannot be pooled.
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NON-RESIDENTIAL IMPACT FEES

Basis for Assessment	Public Schools	Recreation Facilities	Wastewater Treatment	Water Supply & Treatment	
	Not Applicable	Not Applicable	\$ 6.70 per gpd expected water usage. Factors provided in methodology to allow estimates of fee per sq. foot or by other measures, by type of use.	\$ 4.03 per gpd expected water usage. Factors provided in methodology to allow estimates of fee per sq. foot or by other measures, by type of use.	Fees for business and industry will vary by type of business and/or size of structure and estimated demand on utility systems.

*Assessed only to developments connecting to the utility system(s)

The assessment for your proposed project, as indicated by permit application and plans, total

\$ _____ . The contributions are as follows:

- A. Public Schools \$ _____
- B. Recreation Facilities \$ _____
- C. Wastewater Treatment \$ _____
- D. Water Supply & Treatment \$ _____